

HAMILTON COUNTY SURVEYOR'S OFFICE

STANDARD DETAIL DRAWINGS FOR DRAIN DESIGN

APPROVED: 1-1-00

REVISED: 3-8-07

ORDINANCE 3-25-02-A

An Ordinance Approving Standards for Detail Drawings for
Drain Design for Regulated Drains in Hamilton County

WHEREAS, the Hamilton County Drainage Board has jurisdiction over the establishment, maintenance, construction, reconstruction and extension of regulated drains within Hamilton County; and,

WHEREAS, from time to time said regulated drains are extended or reconstructed in order to accommodate the needs of the citizens of Hamilton County; and,

WHEREAS, the Hamilton County Surveyor's Office, acting on behalf of the Hamilton County Drainage Board, has prepared Standard Detail Drawings for Drain Design revised as of February 2, 2002, (hereinafter referred to as "the Standards"); and

WHEREAS, the Standards should be approved by the Commissioners in order to provide uniform standards for developers, contractors, and other persons seeking to construct, or reconstruct, regulated drains within Hamilton County, Indiana.

IT IS THEREFORE ORDAINED by the Board of Commissioners of Hamilton County as follows:

1. All of the terms, conditions, and standards set out in the Standard Detail Drawings for Drain Design prepared by the Hamilton County Surveyor's Office, revised as of February 2, 2002, are hereby ratified and approved.
2. Any persons seeking to construct or reconstruct a regulated drain within Hamilton County shall submit plans for said construction or reconstruction as set out in the Standards.

3. Plans submitted pursuant to the Standards shall be reviewed by the Hamilton County Surveyor's Office in a timely manner, and said Standards shall be presumed to be the Standards for any construction or reconstruction of a drain within Hamilton County.

4. The Board of Commissioners of Hamilton County may amend the Standards at any time by approving an amendment and specifically referring to the section of the Standards which are amended by Ordinance.

5. Any deviation from the Standards for any particular project may be approved by the Hamilton County Drainage Board.

6. This Ordinance shall be in full force and effect on May 1, 2002.

7. Any person constructing or reconstructing a regulated drain contrary to the provisions of this Ordinance, or constructing or reconstructing a regulated drain in a manner contrary to approved plans commits a Class C infraction and may be fined up to Five Hundred Dollars (\$500). Each day of a violation of this Ordinance shall be deemed a separate offense.

8. In addition to the provisions of paragraph seven above, the Hamilton County Surveyor, or the Hamilton County Drainage Board, may seek injunctive relief to prohibit construction or mandate reconstruction in conformance with the Standards.

ALL OF WHICH IS ORDAINED by the Board of Commissioners of Hamilton
County, this 25 day of March, 2002.

BOARD OF COMMISSIONERS OF
HAMILTON COUNTY

Date: 3/25/02

Sharon R. Clark
Sharon Clark

Steven A. Holt
Steven A. Holt

Steven C. Dillinger
Steven C. Dillinger

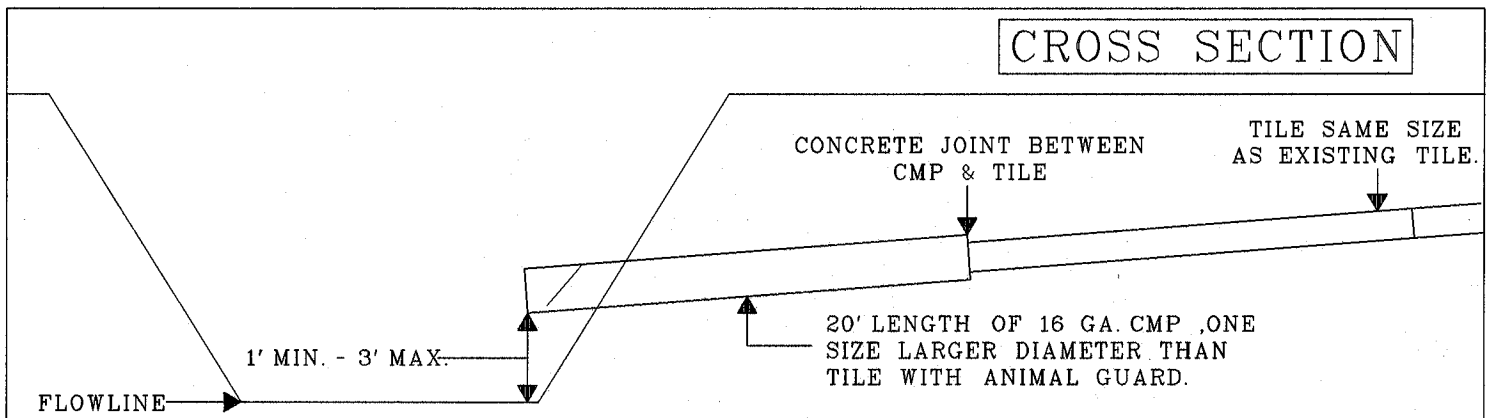
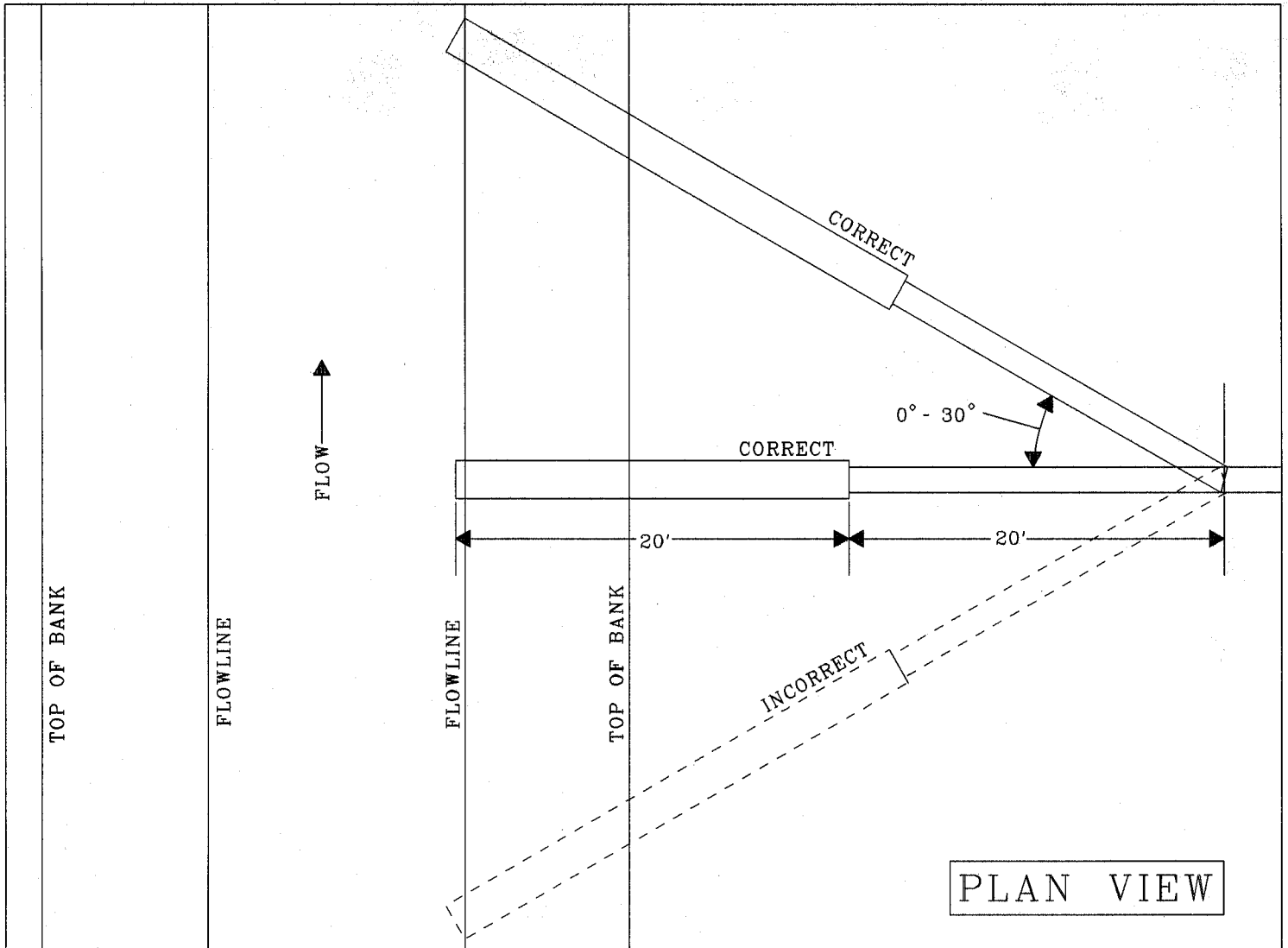
ATTEST:

Robin M. Mills
Robin M. Mills, Auditor

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OFFICE OF THE HAMILTON COUNTY SURVEYOR

DRAIN OUTLET DETAIL #1



(DRAWING NOT TO SCALE)

HAMILTON COUNTY SURVEYOR'S OFFICE

APPROVED: _____

KENTON C. WARD, HAMILTON COUNTY SURVEYOR

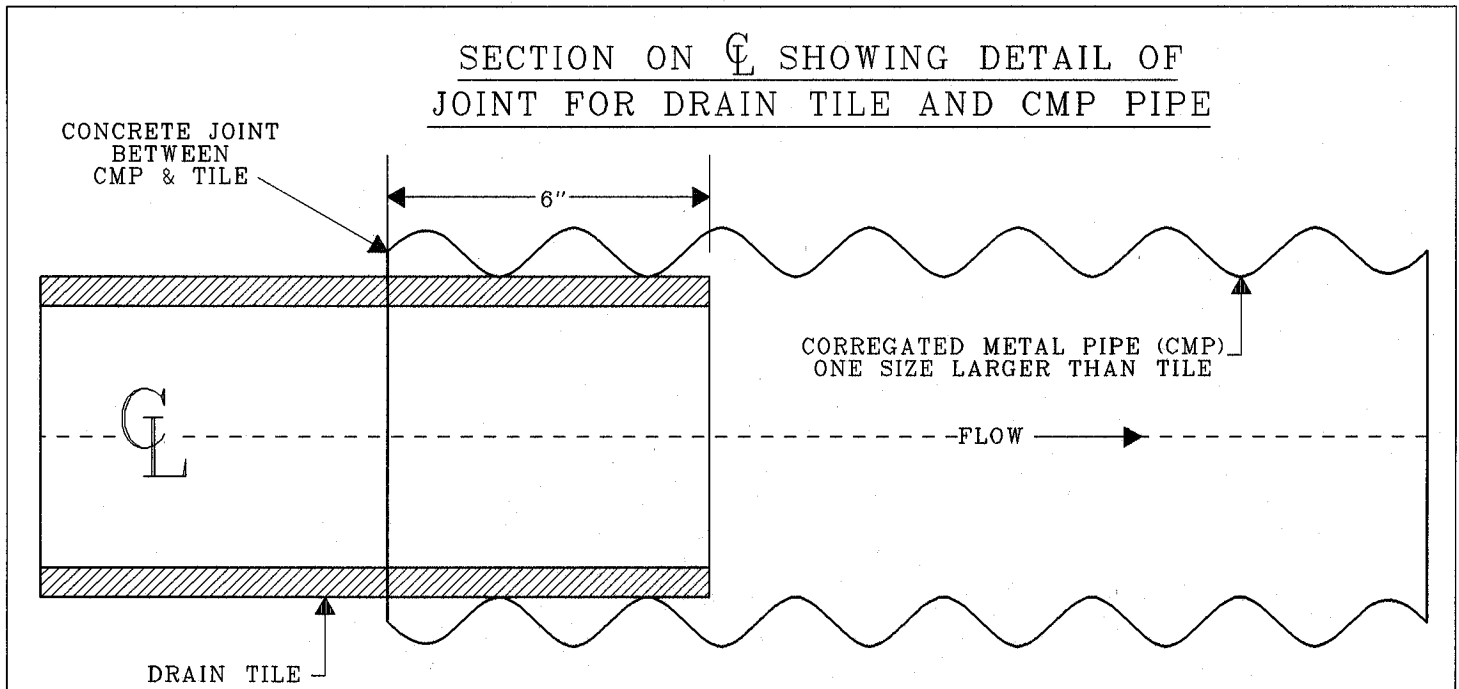
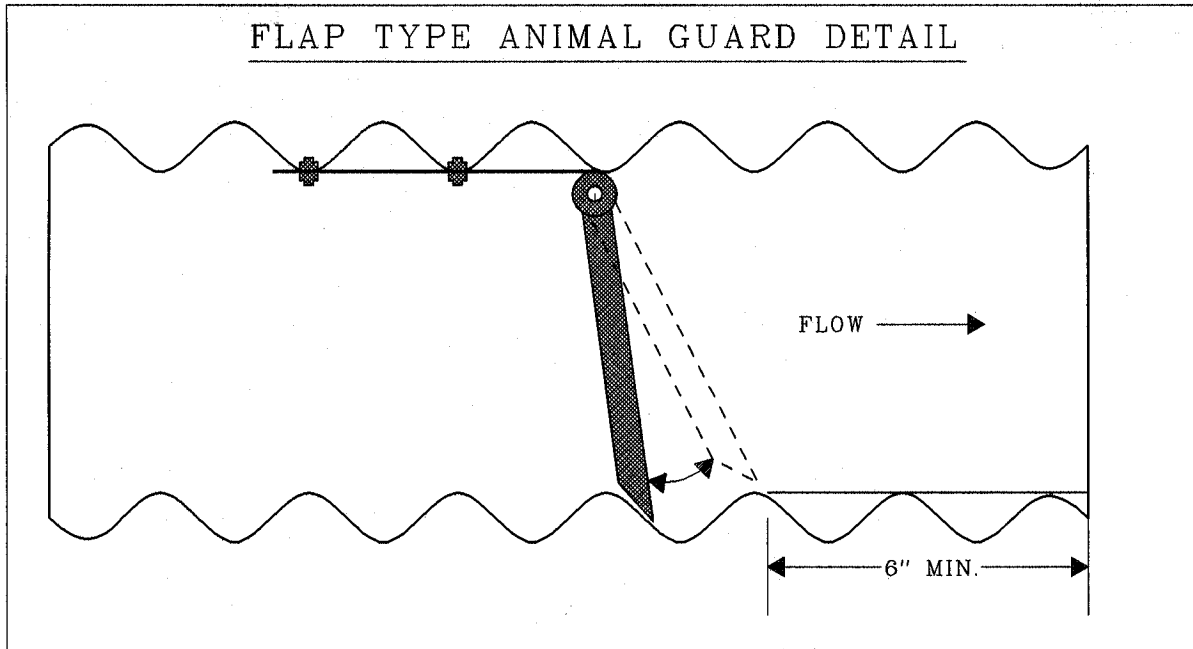
4 JAN 00
DATE

REVISED: 1 JAN 2000

STANDARD PLAN

0-1

DRAIN OUTLET DETAIL #2



(DRAWING NOT TO SCALE)

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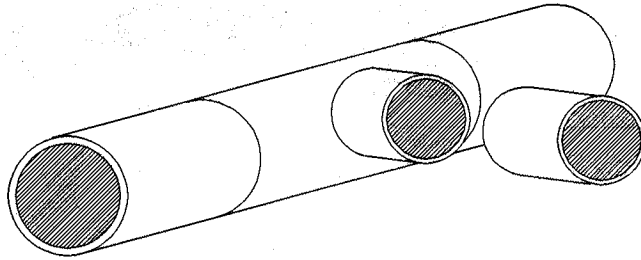
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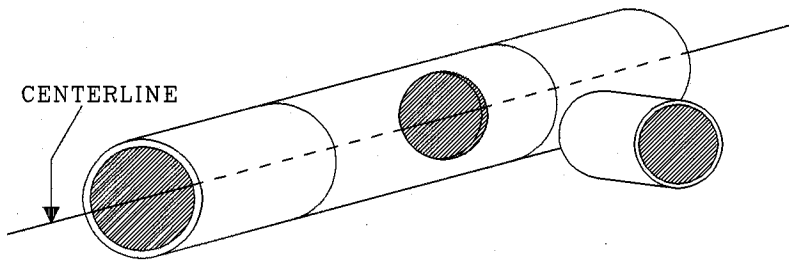
STANDARD PLAN
0-2

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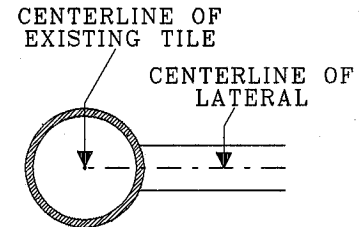
TILE CONNECTION



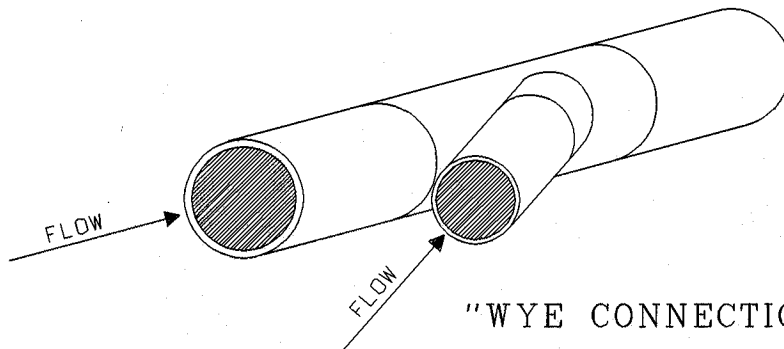
"TEE CONECTION"



"HOLE IN TILE"



CROSS SECTION



"WYE CONNECTION"

(DRAWING NOT TO SCALE)

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APPROVED: _____

KENTON G. WARD, HAMILTON COUNTY SURVEYOR

4 JAN 00
DATE

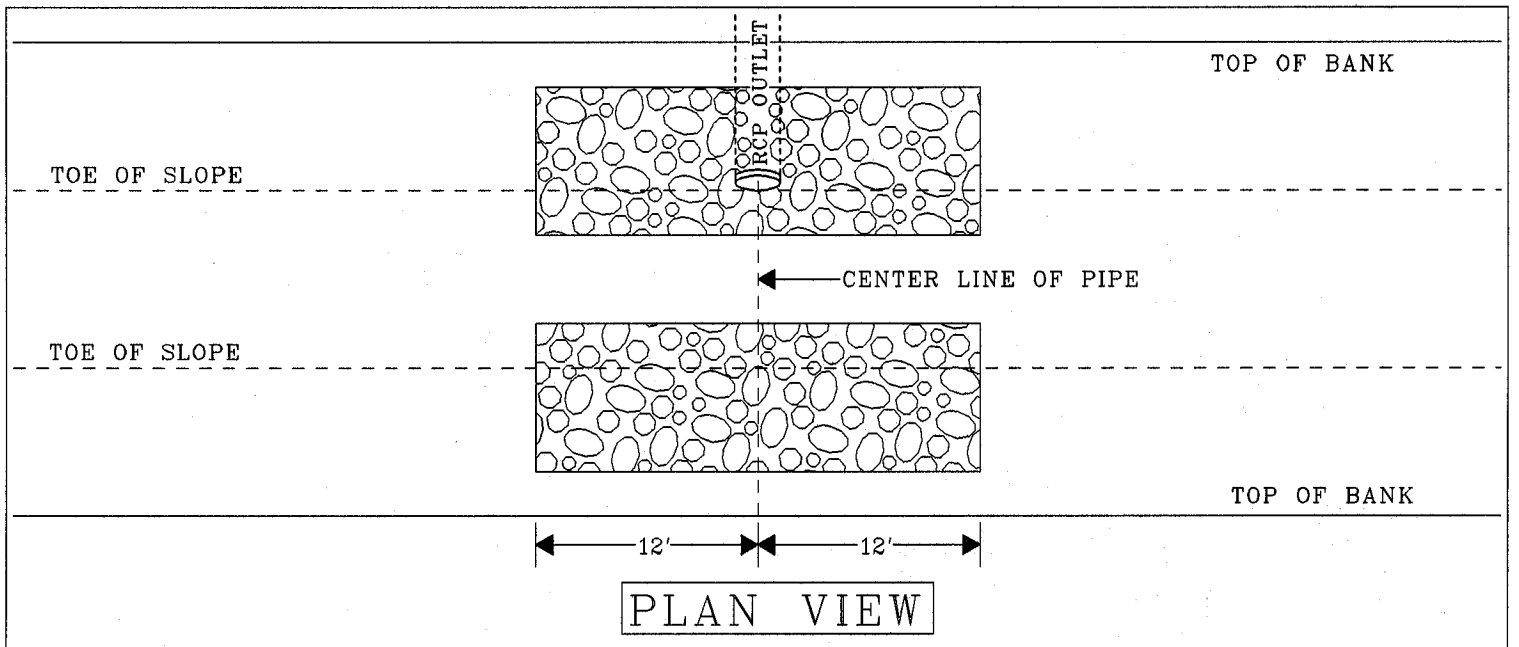
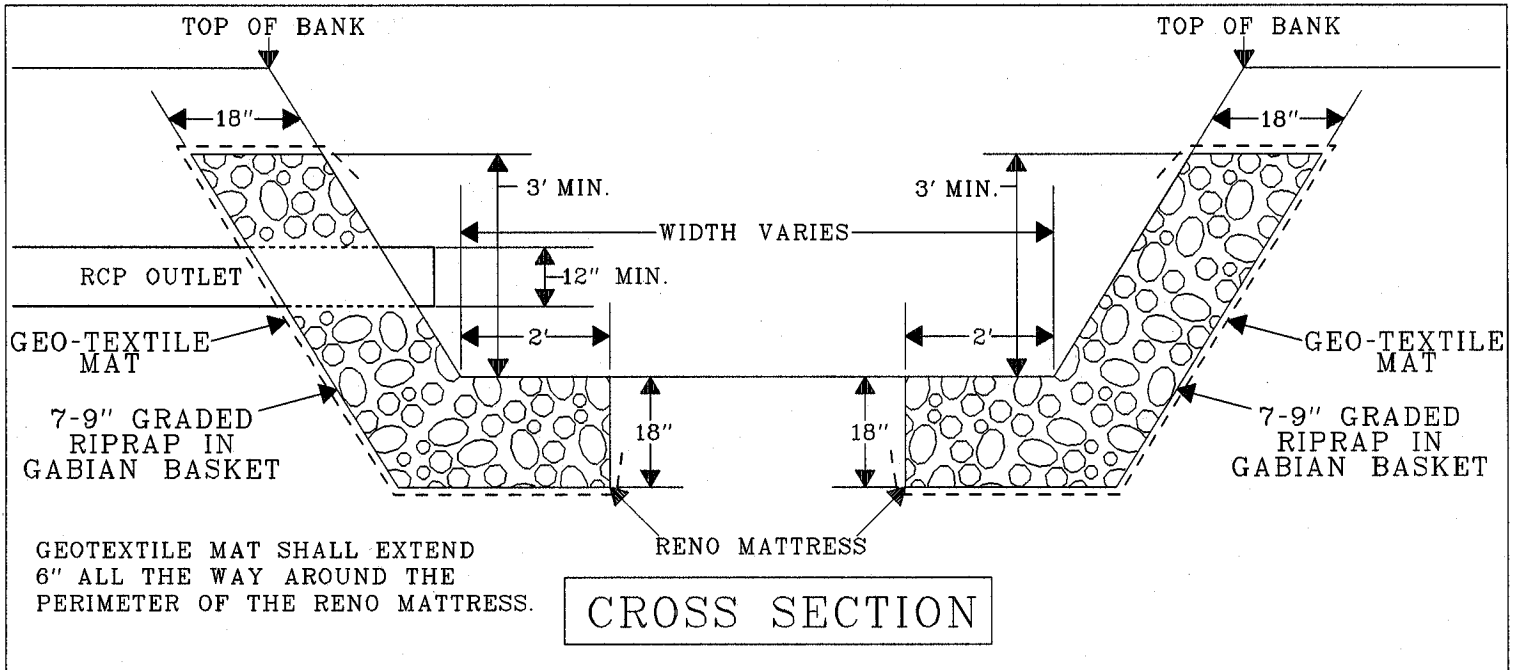
REVISED: 1 JAN 2000

STANDARD PLAN

0-3

OFFICE OF THE HAMILTON COUNTY SURVEYOR

BANK ARMORMENT AT OUTLET PIPE IN OPEN CHANNELS



(DRAWING NOT TO SCALE)

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APPROVED: _____

KENTON C. WARD, HAMILTON COUNTY SURVEYOR

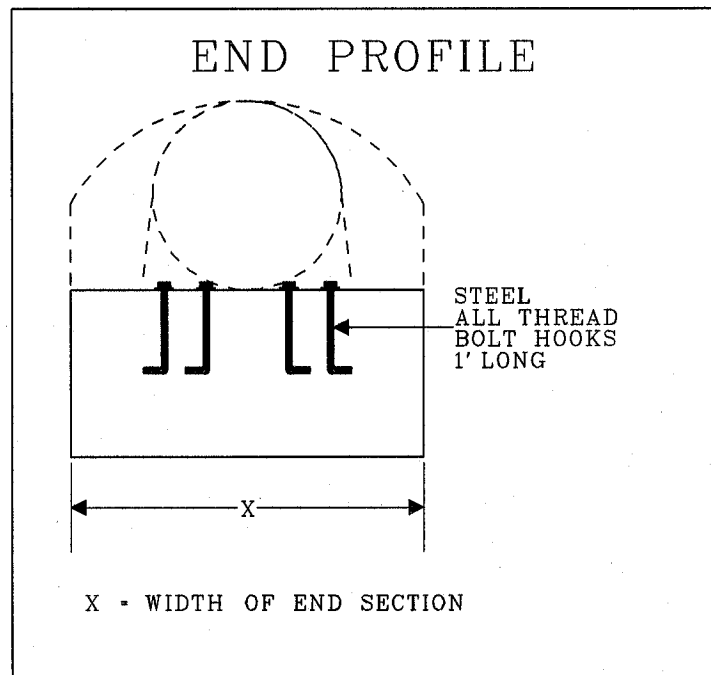
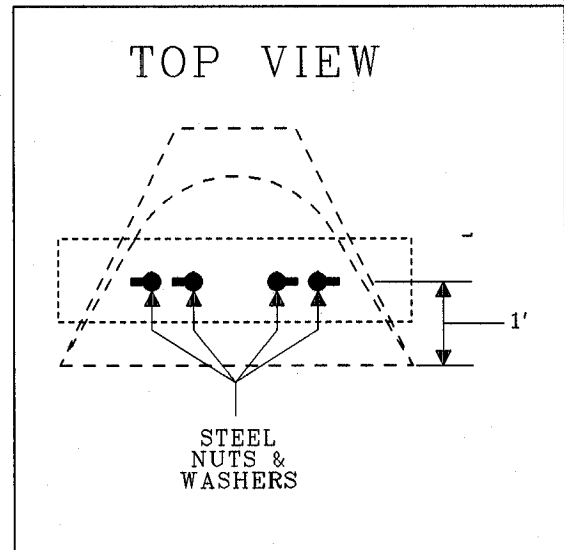
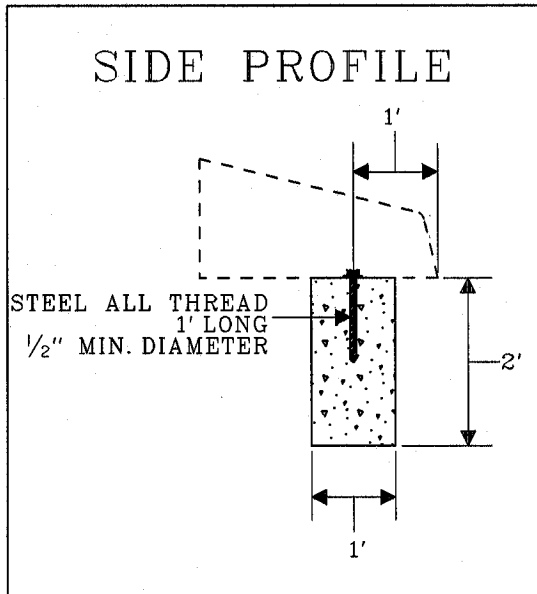
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DATE

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STANDARD PLAN

0-4

ANCHOR FOR CONCRETE END SECTIONS



ALLTHREAD SPACING TO BE TWO PER FOOT
EX: 12" END SECTION - 2 ALLTHREAD
24" END SECTION - 4 ALLTHREAD

(DRAWING NOT TO SCALE)

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REVISED: 1 JAN 2000

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KENTON C. WARD, HAMILTON COUNTY SURVEYOR

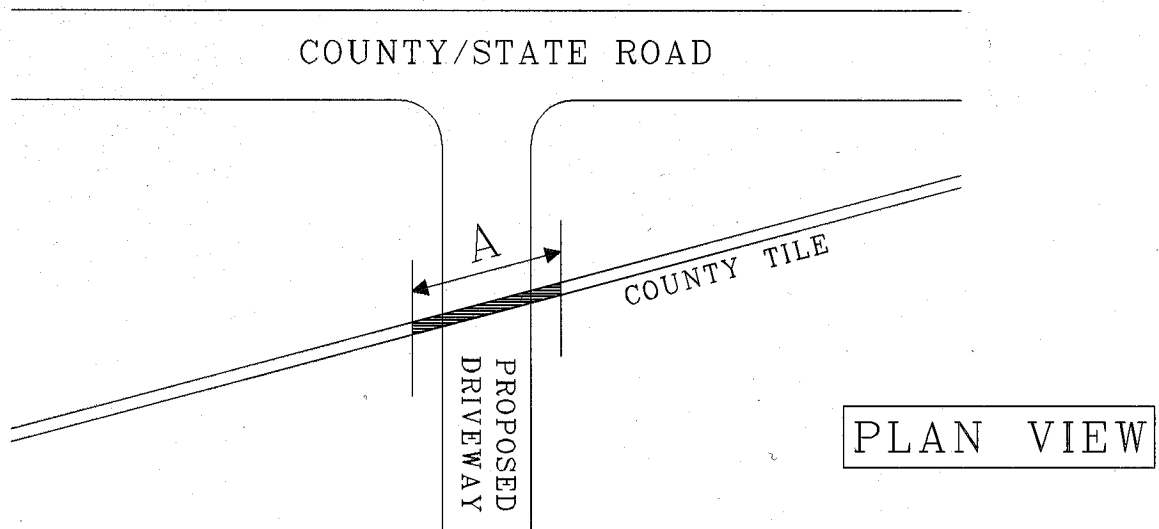
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DATE

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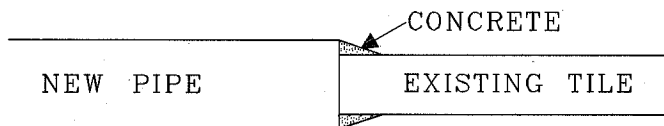
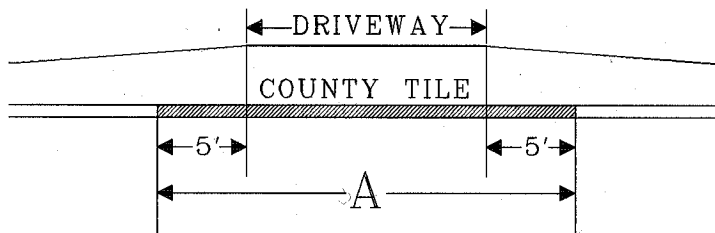
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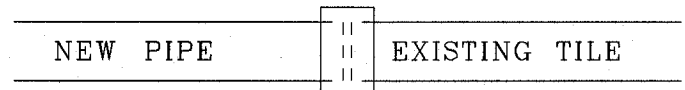
DRIVEWAY CROSSINGS



A. PORTION OF THE COUNTY TILE TO BE REPLACED BY REINFORCED CONCRETE PIPE (RCP), C.M.P., STEEL PIPE OR DUCTILE IRON PIPE. MATERIAL TO BE APPROVED BY THE COUNTY SURVEYORS OFFICE.



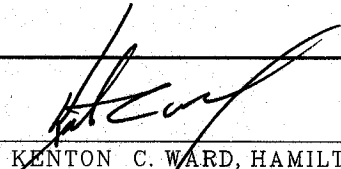
1. NEW PIPE TO BE ONE SIZE LARGER THAN EXISTING TILE. IF NEW TILE IS SAME SIZE AS EXISTING TILE, A FERNCO FITTING OR EQUIVALENT IS TO BE USED TO MAKE CONNECTION.



Notify Hamilton County Surveyors Office two working days prior to crossing for inspection, at (317)776-8495.

(DRAWING NOT TO SCALE)

HAMILTON COUNTY SURVEYOR'S OFFICE

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KENTON C. WARD, HAMILTON COUNTY SURVEYOR

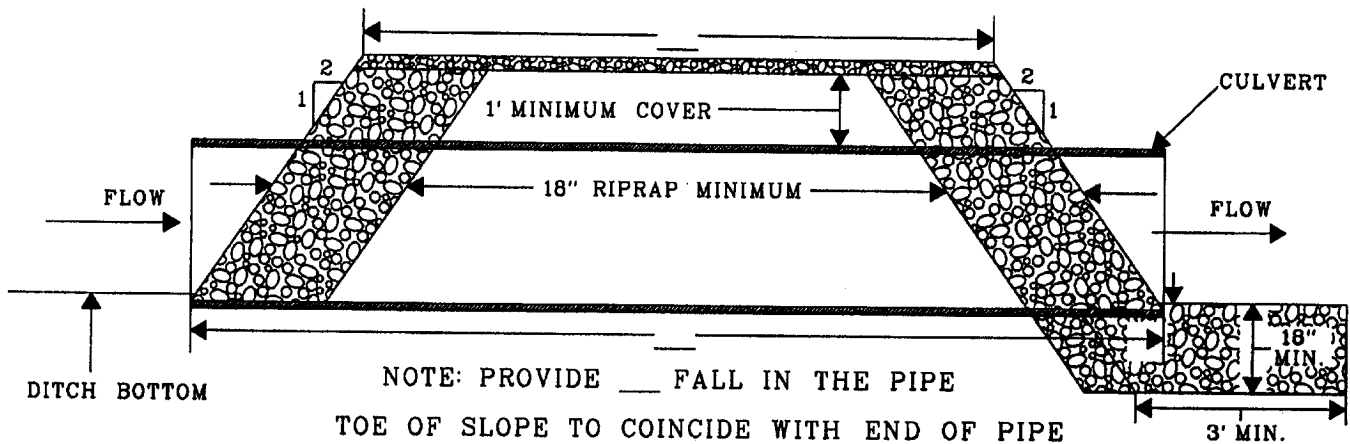
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STANDARD PLAN
C-1

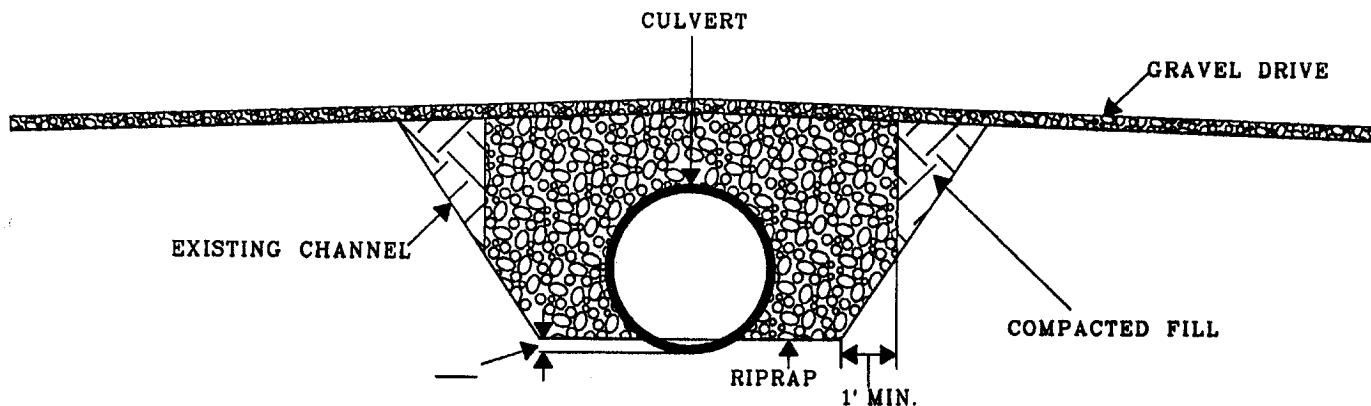
OFFICE OF THE HAMILTON COUNTY SURVEYOR

CULVERT BRIDGE INSTALLATION



NOTE: PROVIDE ____ FALL IN THE PIPE
TOE OF SLOPE TO COINCIDE WITH END OF PIPE
ON BOTH DOWNSTREAM AND UPSTREAM ENDS.

LONGITUDINAL SECTION



NOTE: GOOD COMPACTION OF THE FILL IS CRITICAL. THE CULVERT SHOULD BE
DEPRESSED BELOW THE CHANNEL BOTTOM THE AMOUNT SHOWN ON THE PLAN.

ELEVATION

(DRAWING NOT TO SCALE)

LENGTH OF PIPE: _____ DIAMETER AND PIPE MATERIAL: 1. _____ OR
WIDTH OF ROADWAY: _____ 2. _____
DEPRESSION BELOW FLOWLINE: _____ GRADIENT OF PIPE: _____

HAMILTON COUNTY SURVEYOR'S OFFICE

APPROVED: *Kenton C. Ward* 2/1/02
KENTON C. WARD, HAMILTON COUNTY SURVEYOR DATE

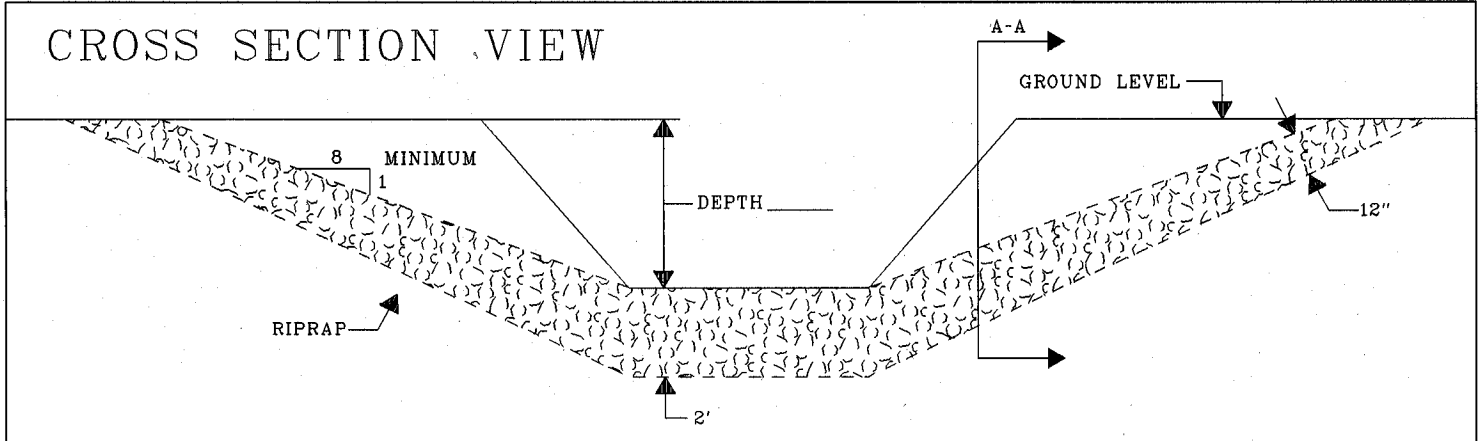
REVISED: 1 FEB 2002

STANDARD PLAN

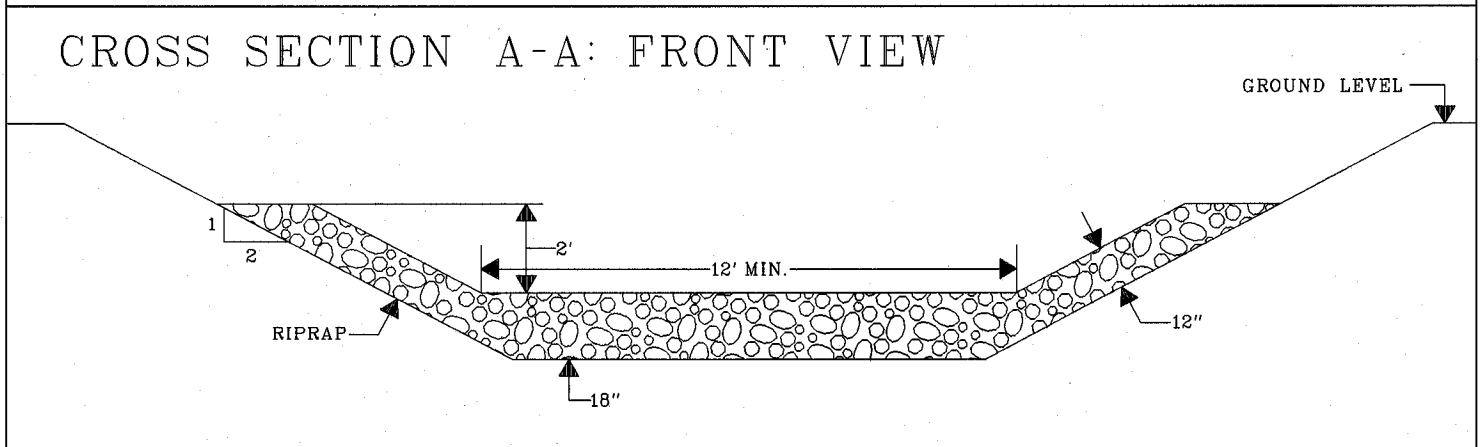
C-2

CHANNEL FORD CROSSING DETAIL

CROSS SECTION VIEW



CROSS SECTION A-A: FRONT VIEW



RIP-RAP SHALL BE 9" GRADED RIP-RAP

NOTE: TOP COAT RIPRAP WITH #53 STONE TO SMOOTH SURFACE.

(DRAWING NOT TO SCALE)

HAMILTON COUNTY SURVEYOR'S OFFICE

APPROVED: _____

KENTON C. WARD, HAMILTON COUNTY SURVEYOR

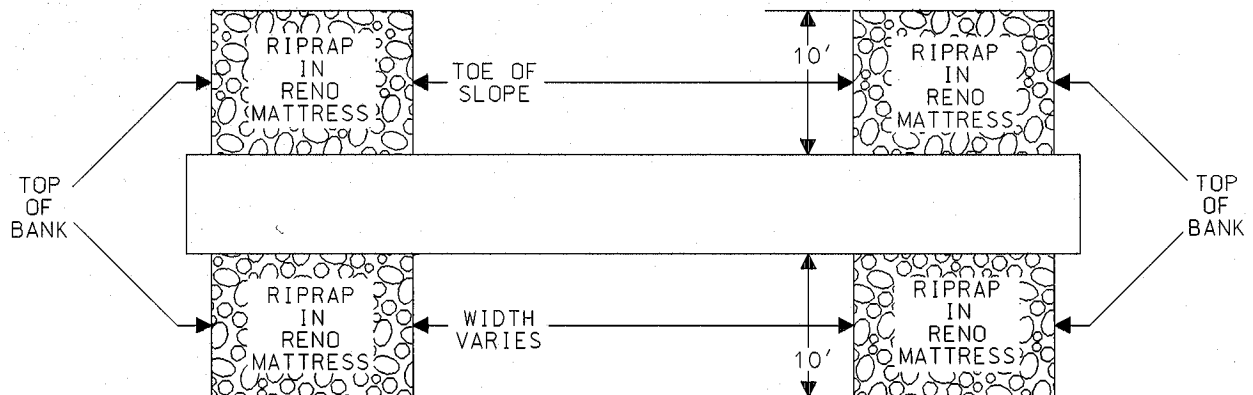
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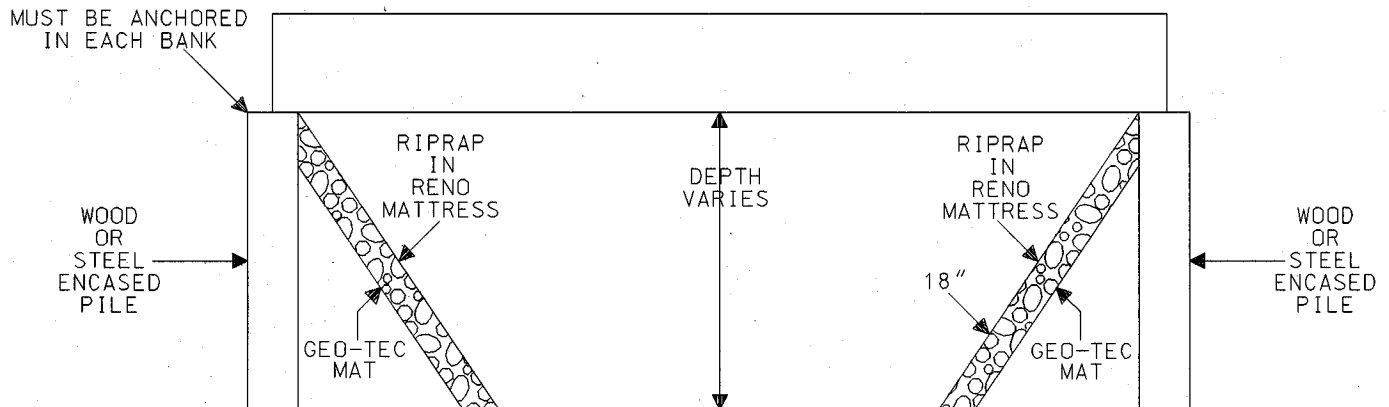
STANDARD PLAN
C-3

OFFICE OF THE HAMILTON COUNTY SURVEYOR

PEDESTRIAN CROSSINGS



PLAN VIEW



CROSS SECTION

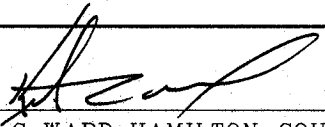
Bridge must be clear span. No supports allowed from the top of bank to top of bank of ditch. No part of the structure may be lower than top of bank.

All structures, whether permanent or temporary, must be approved by the Hamilton County Surveyor prior to construction.

Crossings may require IDNR approval based on location.

(DRAWING NOT TO SCALE)

HAMILTON COUNTY SURVEYOR'S OFFICE

APPROVED: 
KENTON C. WARD, HAMILTON COUNTY SURVEYOR

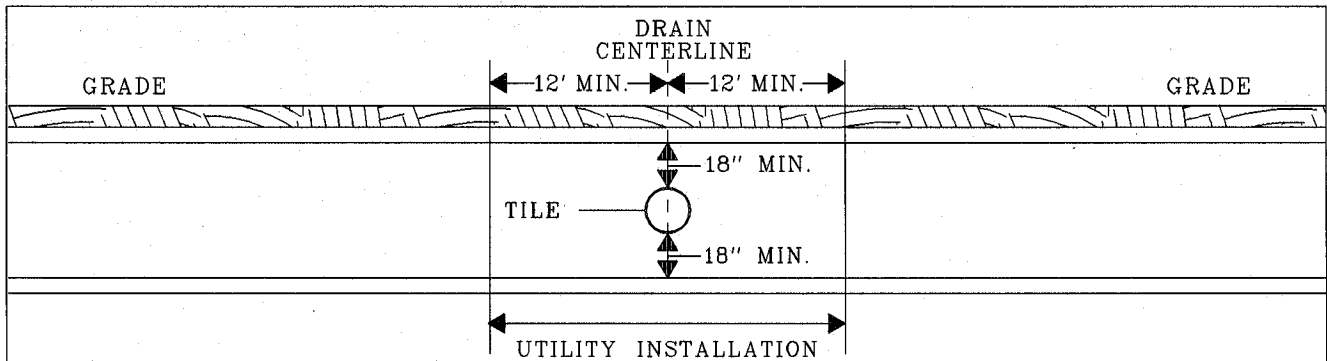
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DATE

REVISED: 1 JAN. 2000

STANDARD PLAN
C-4

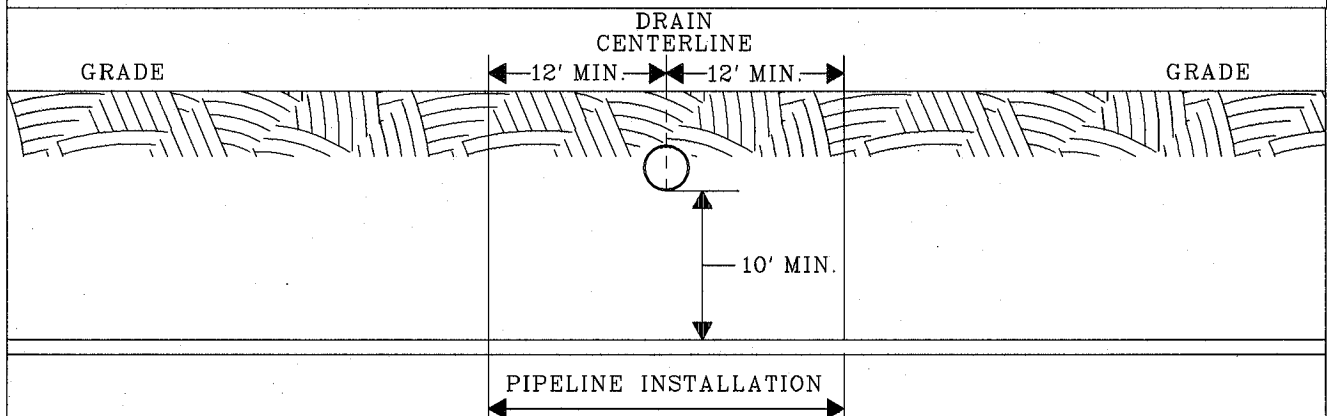
OFFICE OF THE HAMILTON COUNTY SURVEYOR

PIPELINE & UTILITY INSTALLATION CROSS SECTION: TILE DRAIN



UTILITY INSTALLATION CROSS SECTION

(DRAWING NOT TO SCALE)



PIPELINE INSTALLATION CROSS SECTION

(DRAWING NOT TO SCALE)

When installing a utility across a tile regulated drain, the utility contractor will adhere to the following procedure.

1. Utility to be installed a minimum of eighteen (18") inches below or above existing tile.
2. If utility is to be installed using directional boring methods. The utility installation shall be a minimum of five (5') feet below tile drain.
3. All petroleum pipelines and/or high pressure transmission lines are to be installed a minimum of ten (10') feet below existing invert of tile drains.
4. If sanitary sewer is installed under drain, sewer shall be encased with concrete. Minimal distance shall be measured from top of concrete encasement.
5. Utility contractor shall adhere to open drain crossing standard during construction process.
6. Notify Surveyor's Office at (317)776-8495, two working days prior to installation and backfilling.

HAMILTON COUNTY SURVEYOR'S OFFICE

APPROVED: _____

KENTON C. WARD HAMILTON COUNTY SURVEYOR

4 JAN 00
DATE

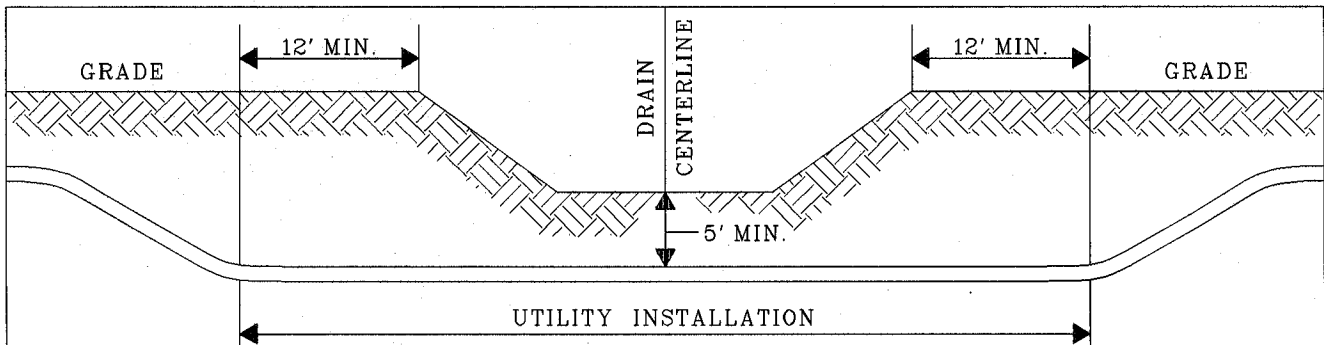
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STANDARD PLAN

C-5

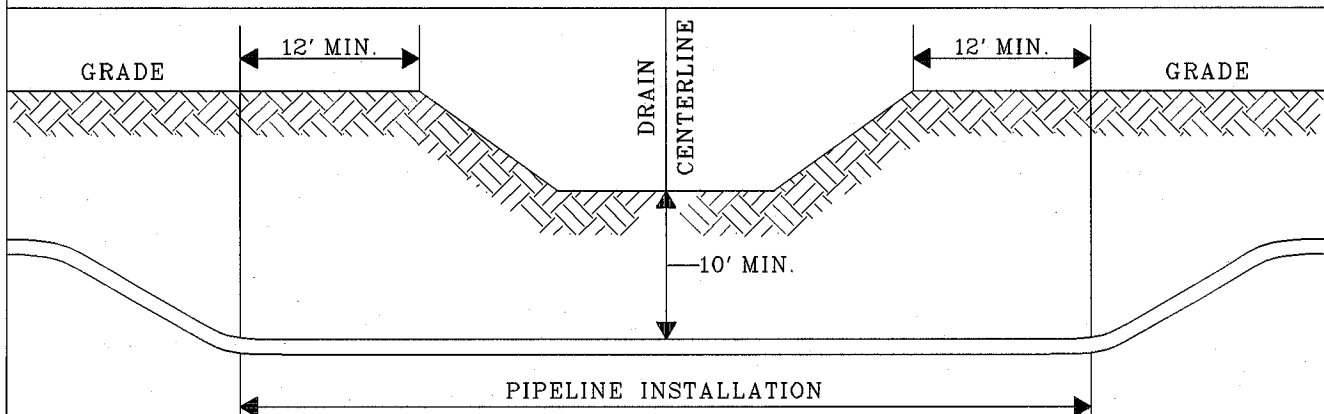
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PIPELINE & UTILITY INSTALLATION CROSS SECTION-OPEN



UTILITY INSTALLATION CROSS SECTION

(DRAWING NOT TO SCALE)



PIPELINE INSTALLATION CROSS SECTION

(DRAWING NOT TO SCALE)

When installing a utility in, through or across an open regulated drain, the utility contractor will adhere to the following procedure.

1. Utility to be installed a minimum of five (5') feet below existing flow line of drain. All petroleum pipelines and/or high pressure transmission lines are to be installed a minimum of ten (10') feet below existing flow line of drain.
2. If sanitary sewer is installed under drain, sewer shall be encased with concrete. Minimal distance shall be measured from top of concrete encasement.
3. Utility contractor shall adhere to open drain crossing standard during construction process
4. Notify Surveyor's Office at (317)776-8495 two working days prior to installation and backfilling.

HAMILTON COUNTY SURVEYOR'S OFFICE

APPROVED: _____

KENTON C. WARD, HAMILTON COUNTY SURVEYOR

4 JAN 00
DATE

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STANDARD PLAN

C-6

OFFICE OF THE HAMILTON COUNTY SURVEYOR

OPEN DRAIN CROSSING

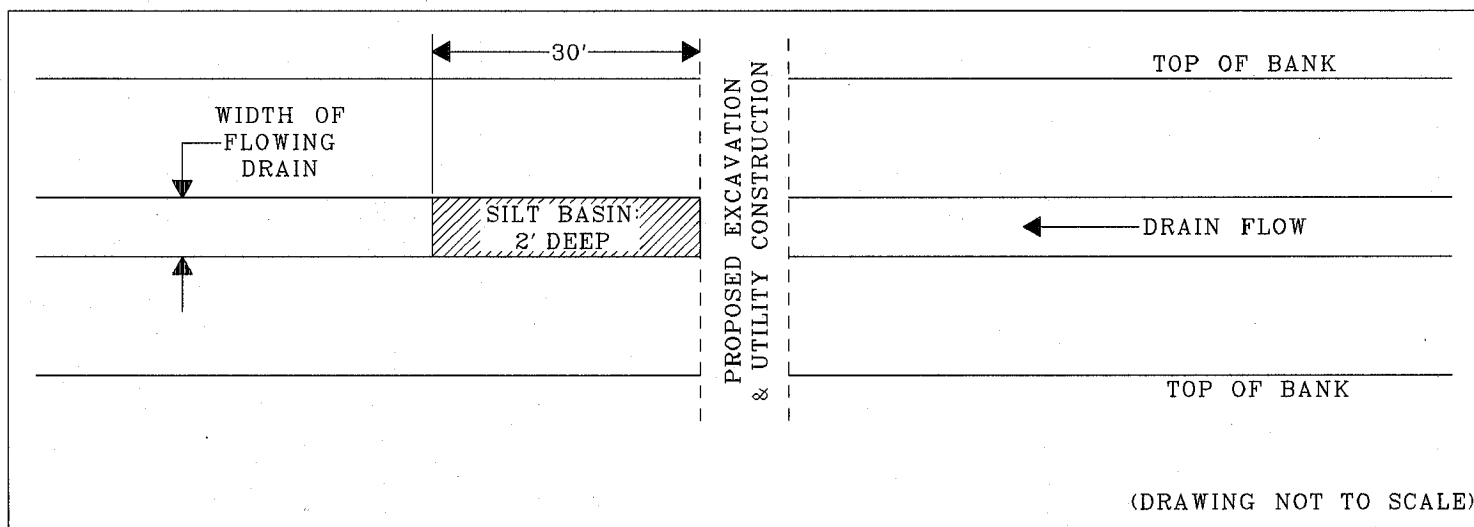
When excavating in, across, or through an open drain, the utility contractor will adhere to the following procedure:

1. Excavate silt basin:

Silt basin location & length to be determined in field by Hamilton County Surveyor or designated representative.

Contractor shall maintain silt basin throughout work duration

2. Riprap shall be keyed or pressed into ditch bank at location of excavation on bank and slope. Riprap stone shall be 9 inches graded. Riprap area will be one foot in depth, 4 feet minimum in height from flow line, 4 feet minimum in width. No riprap will be placed in flow line of drain.



3. All disturbed areas, other than bank slope are to be seeded and mulched. The contractor has the option of using an erosion control fabric if desired.

4. Notify the Hamilton County Surveyors office at (317)776-8495, two working days prior to back-filling.

HAMILTON COUNTY SURVEYOR'S OFFICE

APPROVED: _____

KENTON C. WARD, HAMILTON COUNTY SURVEYOR

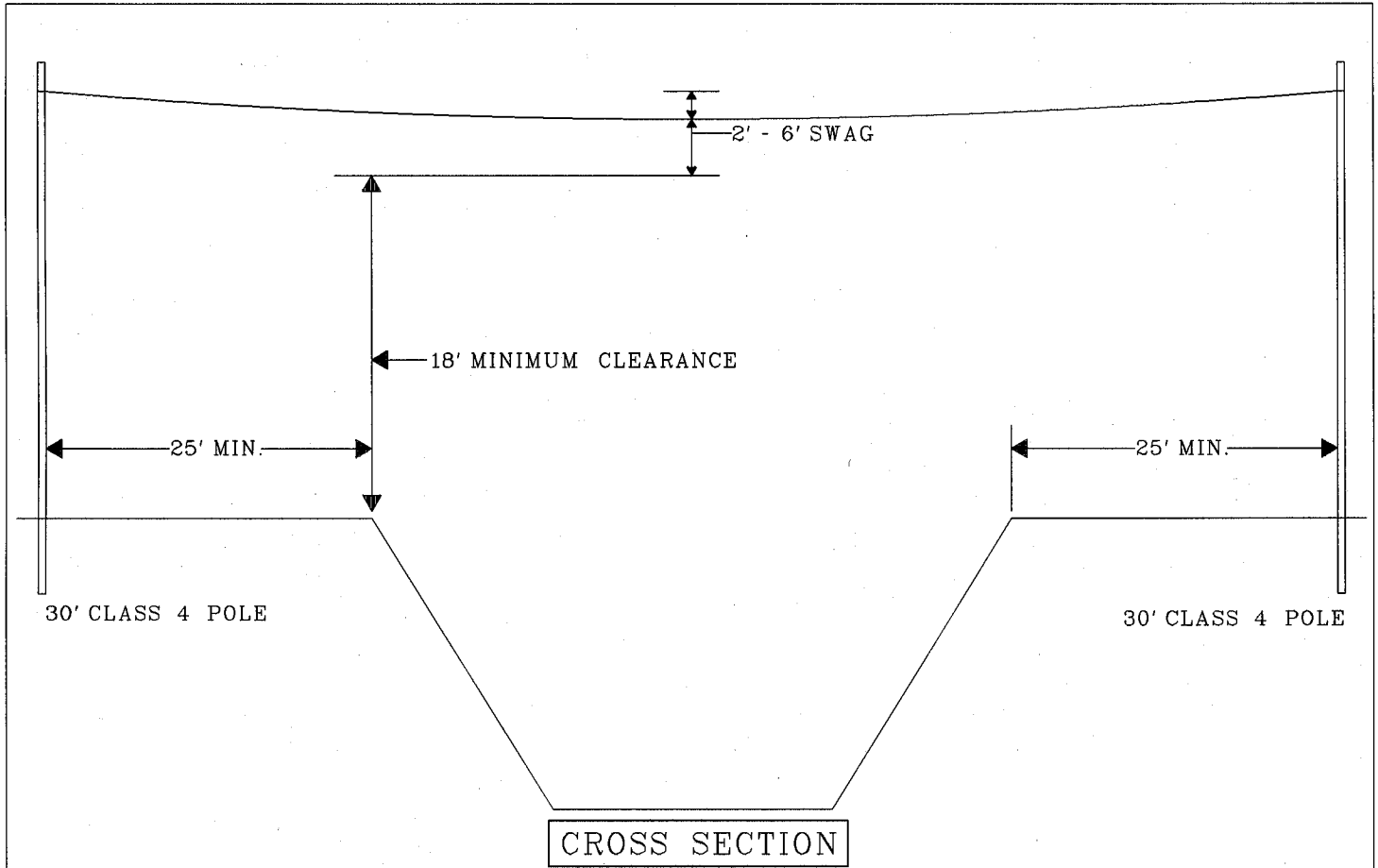
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STANDARD PLAN

C-7

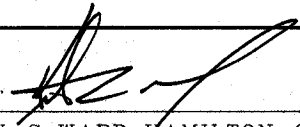
OFFICE OF THE HAMILTON COUNTY SURVEYOR



AERIAL CROSSING OF REGULATED DRAINS

(DRAWING NOT TO SCALE)

HAMILTON COUNTY SURVEYOR'S OFFICE

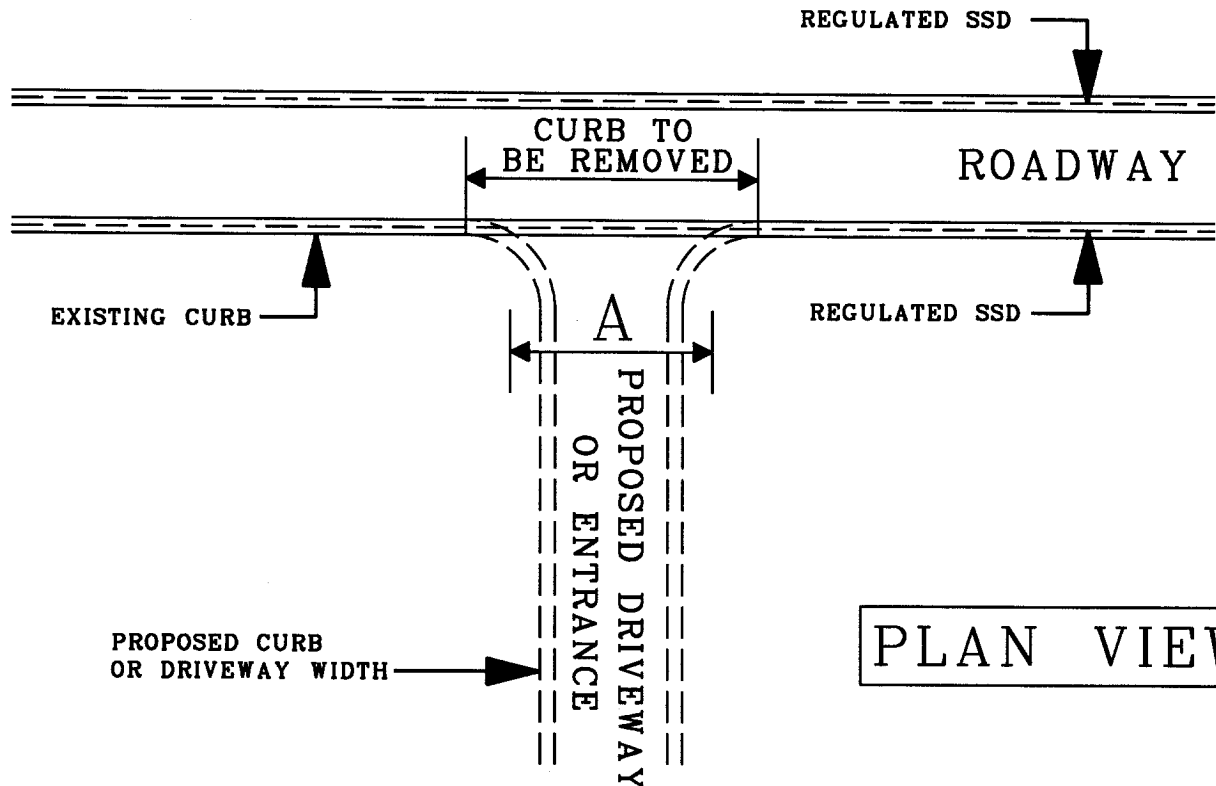
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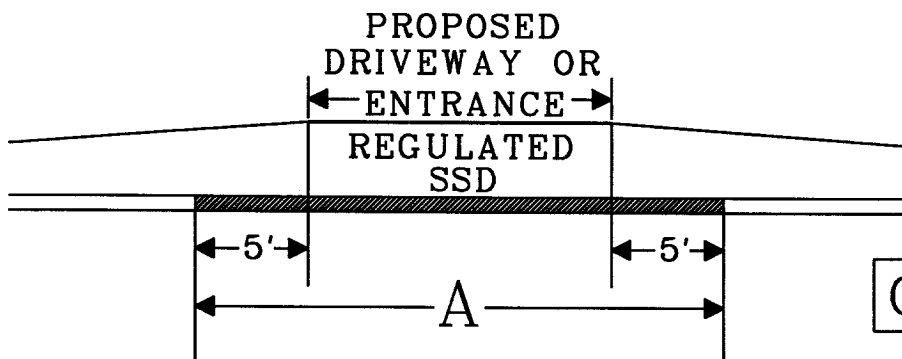
REVISED: 1 JAN 2000

STANDARD PLAN
C-8

OFFICE OF THE HAMILTON COUNTY SURVEYOR



IF A PORTION OF THE EXISTING CURB IS TO BE REMOVED WITH A DRIVEWAY OR COMMERCIAL ENTRANCE PERMIT AND THE REGULATED SSD IS EXISTING SINGLE WALL PIPE, THE REGULATED SSD SHALL BE REPLACED WITH DOUBLE WALL SMOOTH BORE PERFORATED (HDPE) PIPE. THE PIPE SHALL BE REPLACED A MINIMUM DISTANCE OF "A." PROPER COUPLINGS SHALL BE USED AND THE TRENCH SHALL BE BACKFILLED IN ACCORDANCE WITH THE SSD STANDARD FOR THE ENTITY THAT MAINTAINS THE RIGHT OF WAY.



Notify Hamilton County Surveyors Office two working days prior to crossing to schedule an inspection, at (317)776-8495.

(DRAWING NOT TO SCALE)

HAMILTON COUNTY SURVEYOR'S OFFICE

REGULATED SSD CROSSINGS

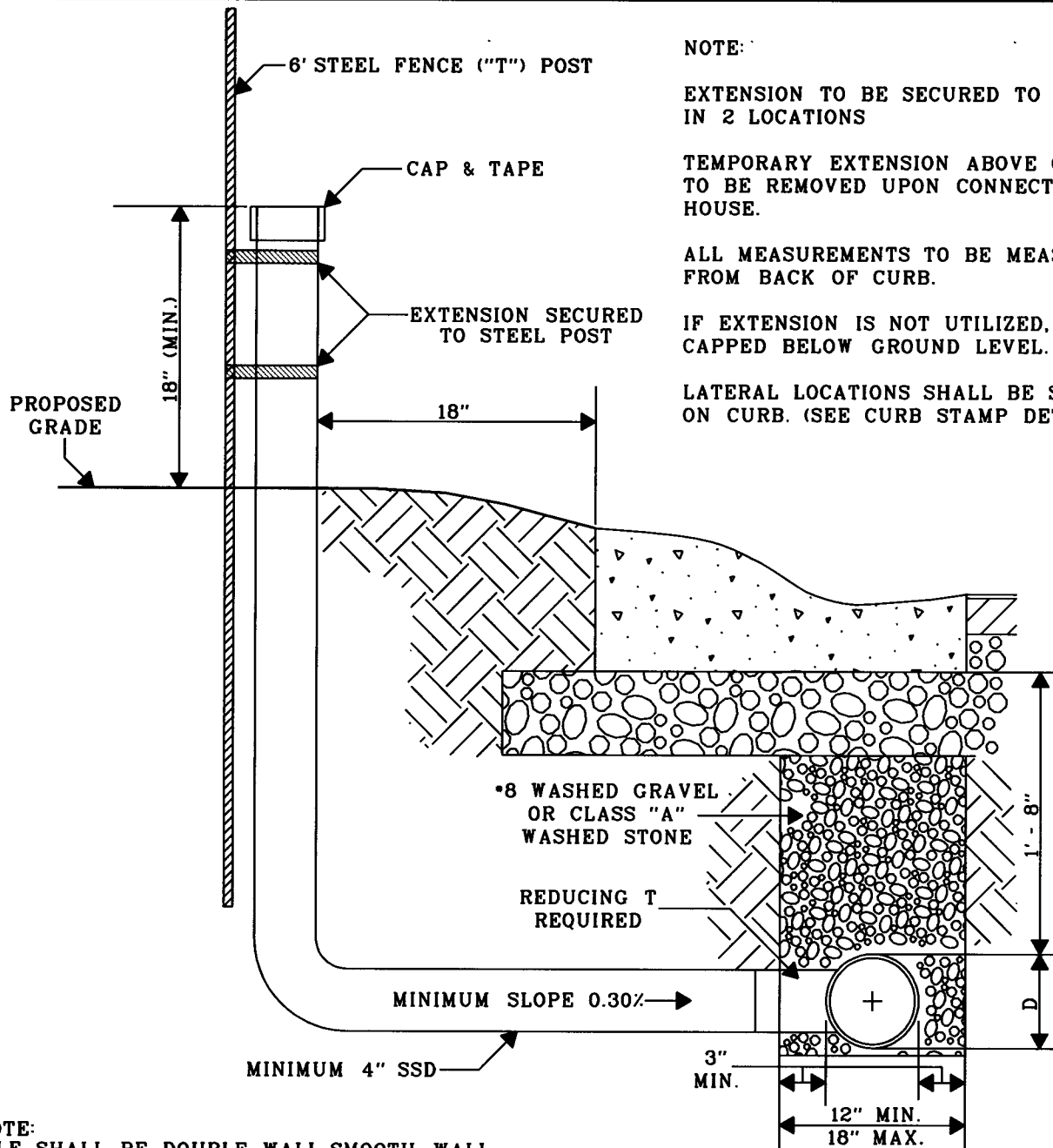
REVISED: 14 DEC 2006

APPROVED: KENTON C. WARD
KENTON C. WARD, HAMILTON COUNTY SURVEYOR

8MAR07
DATE

STANDARD PLAN
C-9

OFFICE OF THE HAMILTON COUNTY SURVEYOR



NOTE:

EXTENSION TO BE SECURED TO STEEL POST IN 2 LOCATIONS

TEMPORARY EXTENSION ABOVE GROUND TO BE REMOVED UPON CONNECTION TO HOUSE.

ALL MEASUREMENTS TO BE MEASURED FROM BACK OF CURB.

IF EXTENSION IS NOT UTILIZED, IT IS TO BE CAPPED BELOW GROUND LEVEL.

LATERAL LOCATIONS SHALL BE STAMPED ON CURB. (SEE CURB STAMP DETAIL)

NOTE:
TILE SHALL BE DOUBLE WALL-SMOOTH WALL PERFORATED PLASTIC PIPE.

MINIMUM 6" SUB SURFACE DRAIN
D - PIPE DIAMETER

TYPICAL SSD LATERAL TO INDIVIDUAL LOTS ALONG STREETS

(DRAWING NOT TO SCALE)

HAMILTON COUNTY SURVEYOR'S OFFICE

APPROVED:

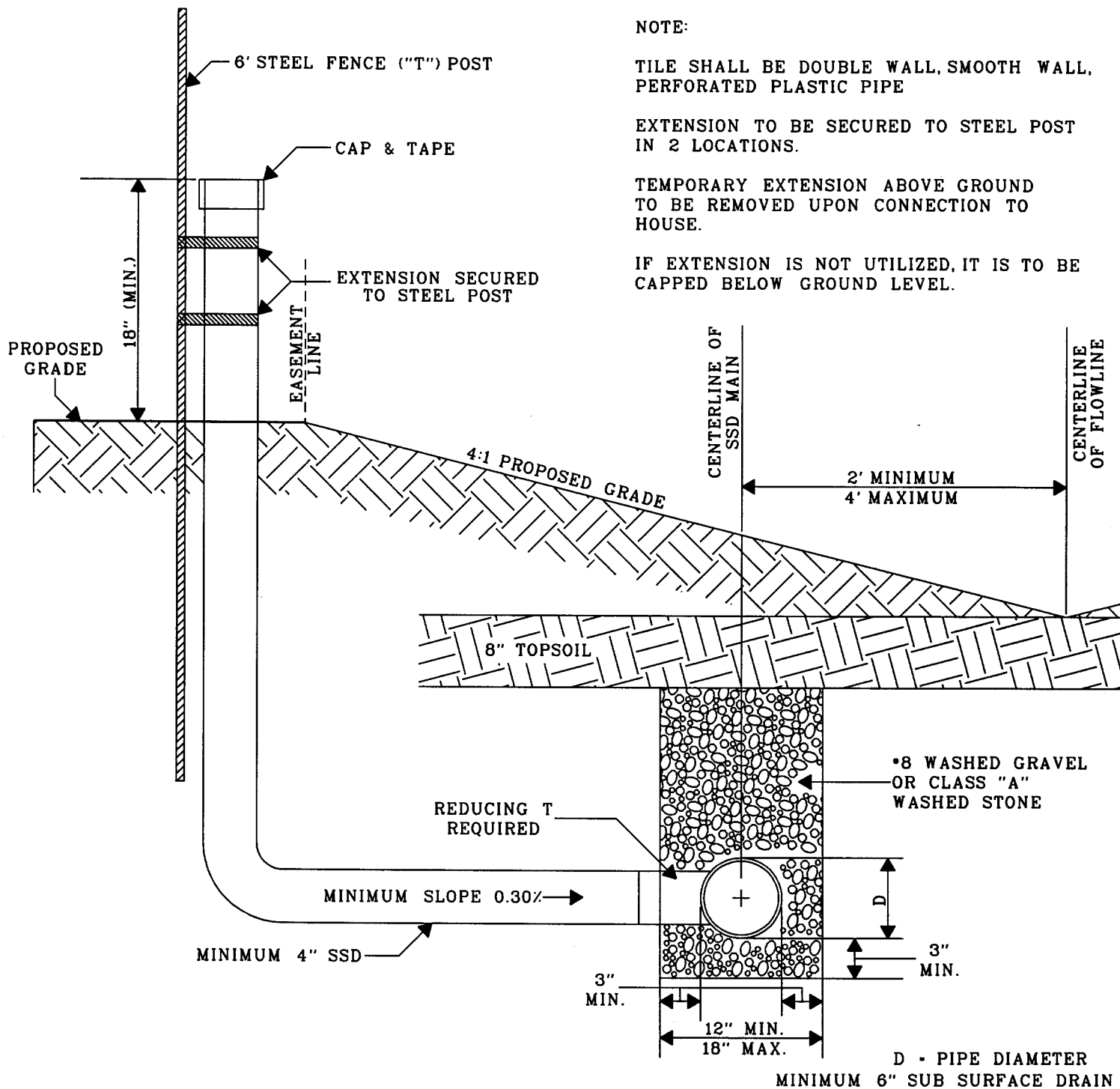
KENTON C. WARD, HAMILTON COUNTY SURVEYOR

8/15/05
DATE

REVISED: 6 JUN 2005

STANDARD PLAN
SSD-1

OFFICE OF THE HAMILTON COUNTY SURVEYOR



TYPICAL SSD LATERAL TO INDIVIDUAL LOTS IN REAR YARD

(DRAWING NOT TO SCALE)

HAMILTON COUNTY SURVEYOR'S OFFICE

APPROVED:

KENTON C. WARD, HAMILTON COUNTY SURVEYOR

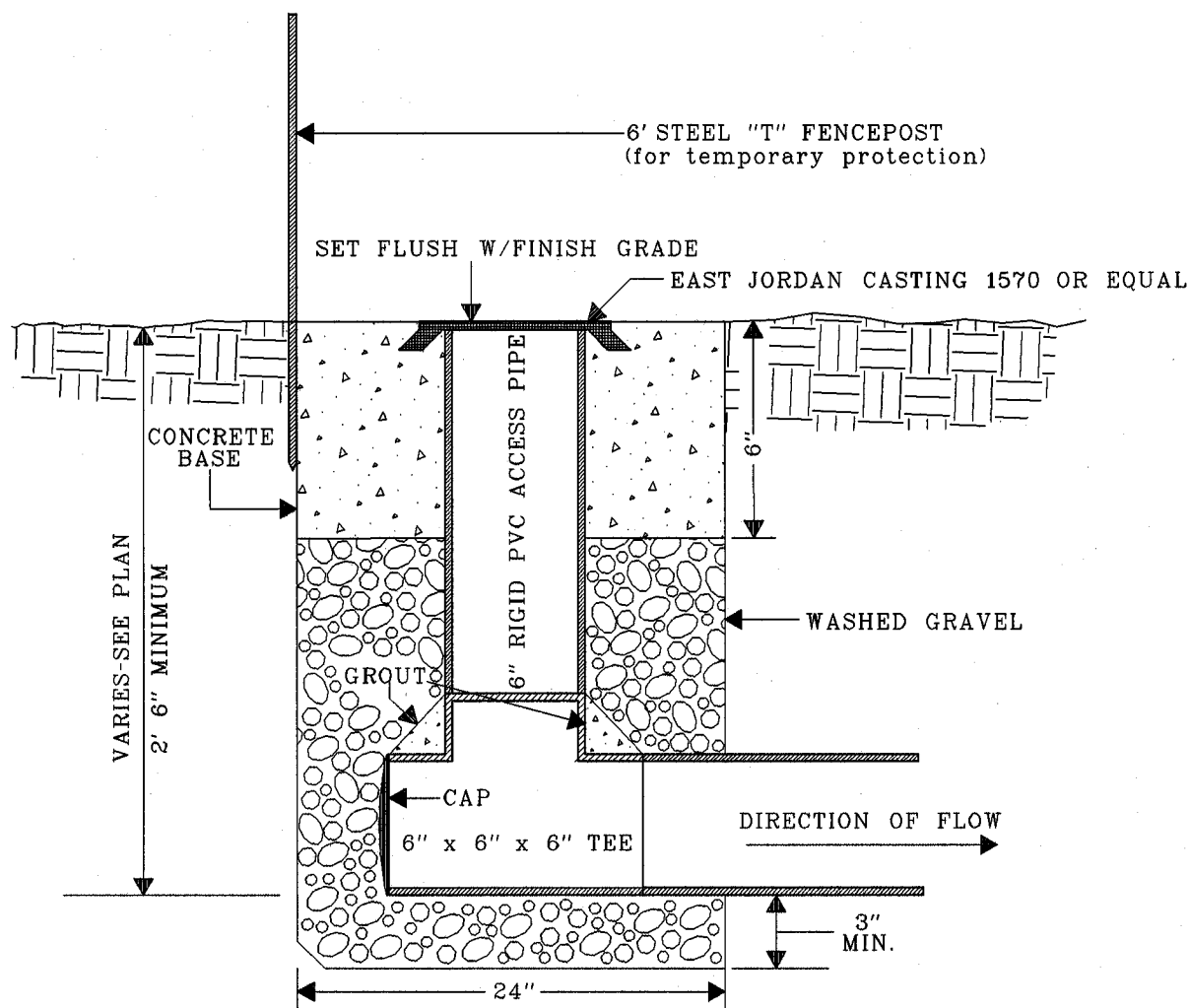
DATE

REVISED: 1 JAN 2000

STANDARD PLAN

SSD-2

OFFICE OF THE HAMILTON COUNTY SURVEYOR



SUBSURFACE DRAIN (SSD) RISER DETAIL

(DRAWING NOT TO SCALE)

HAMILTON COUNTY SURVEYOR'S OFFICE

REVISÉ: 1 JAN 2000

APPROVED:

KENTON C. WARD, HAMILTON COUNTY SURVEYOR

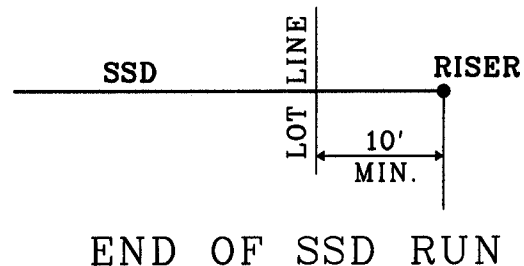
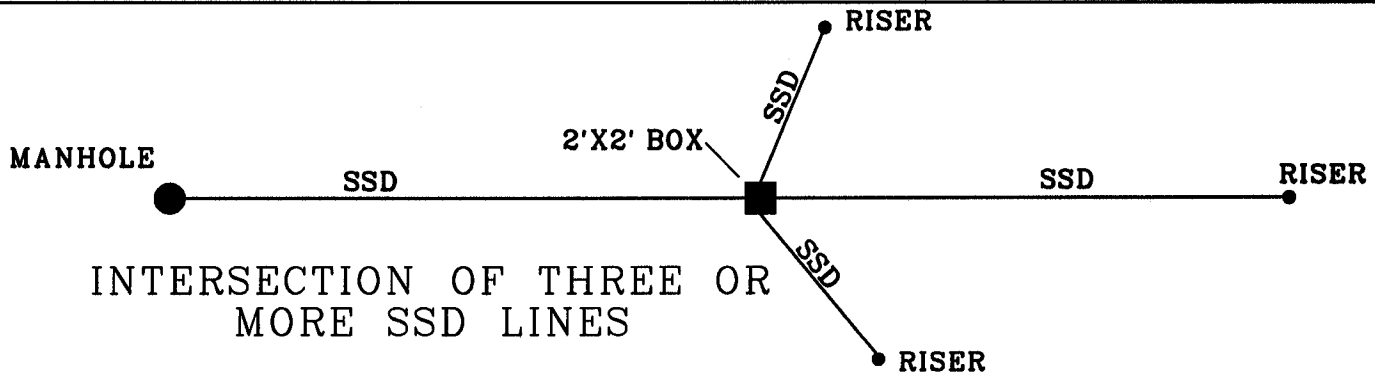
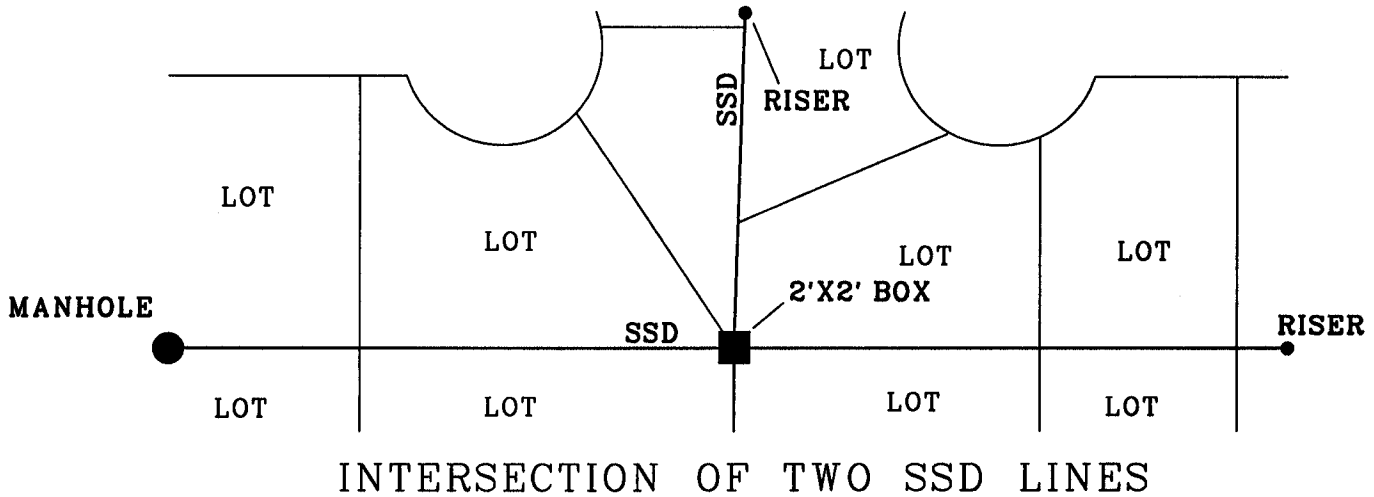
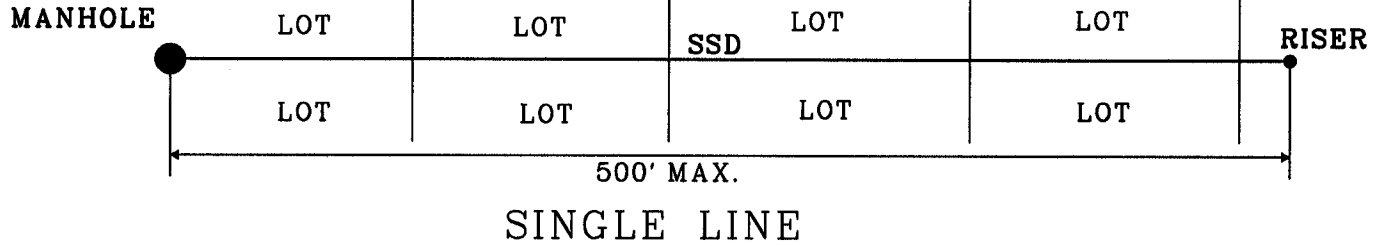
4 JAN 00
DATE

STANDARD PLAN

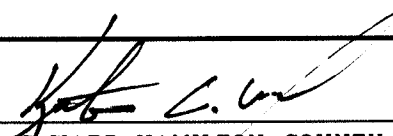
SSD-3

OFFICE OF THE HAMILTON COUNTY SURVEYOR

RISER LOCATIONS



HAMILTON COUNTY SURVEYOR'S OFFICE

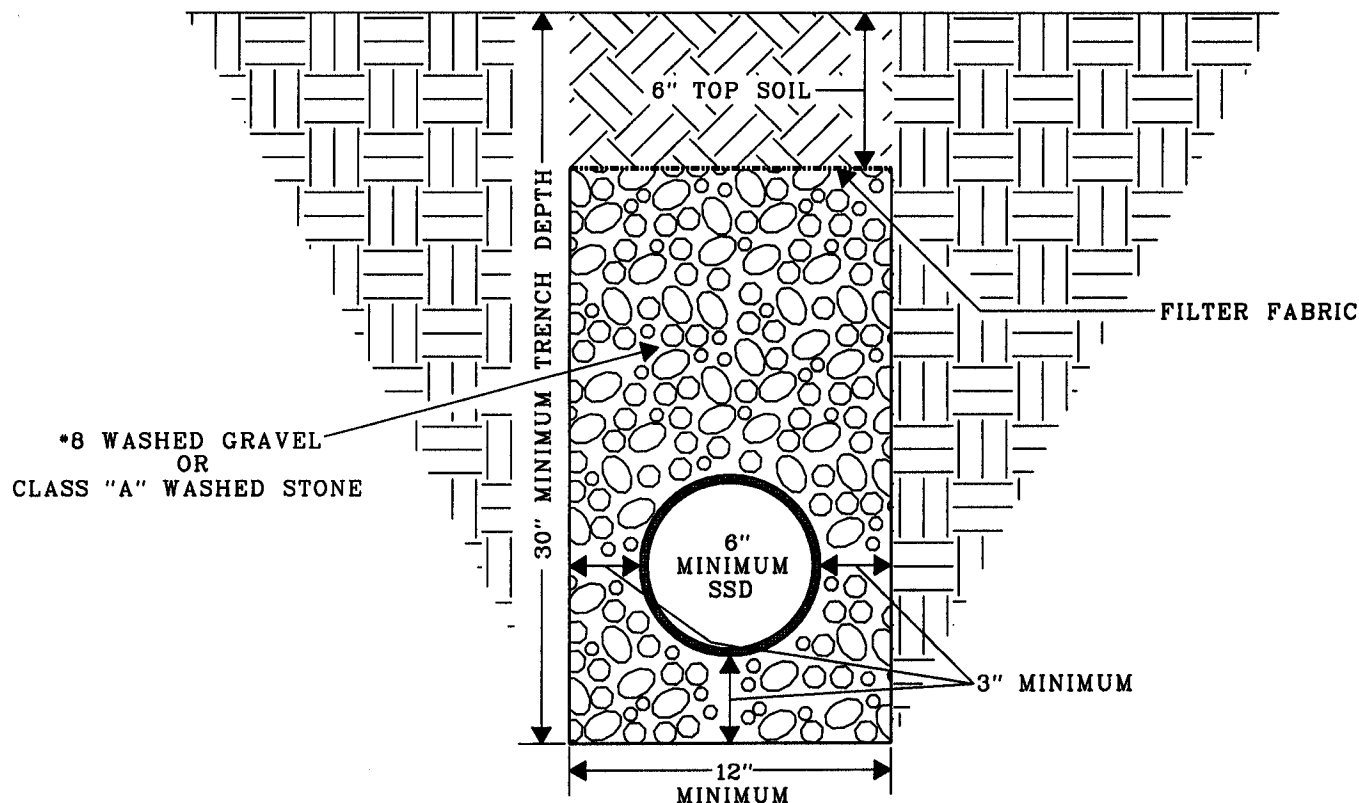
APPROVED: 
KENTON C. WARD, HAMILTON COUNTY SURVEYOR

2/1/02
DATE

REVISED: 1 FEB 2002

STANDARD PLAN
SSD-4

OFFICE OF THE HAMILTON COUNTY SURVEYOR



NOTE:
TILE SHALL BE DOUBLE WALL, SMOOTH
WALL PERFORATED PLASTIC PIPE.

SUBSURFACE DRAIN (SSD) DETAIL WITHOUT SWALE

(DRAWING NOT TO SCALE)

HAMILTON COUNTY SURVEYOR'S OFFICE

APPROVED: _____

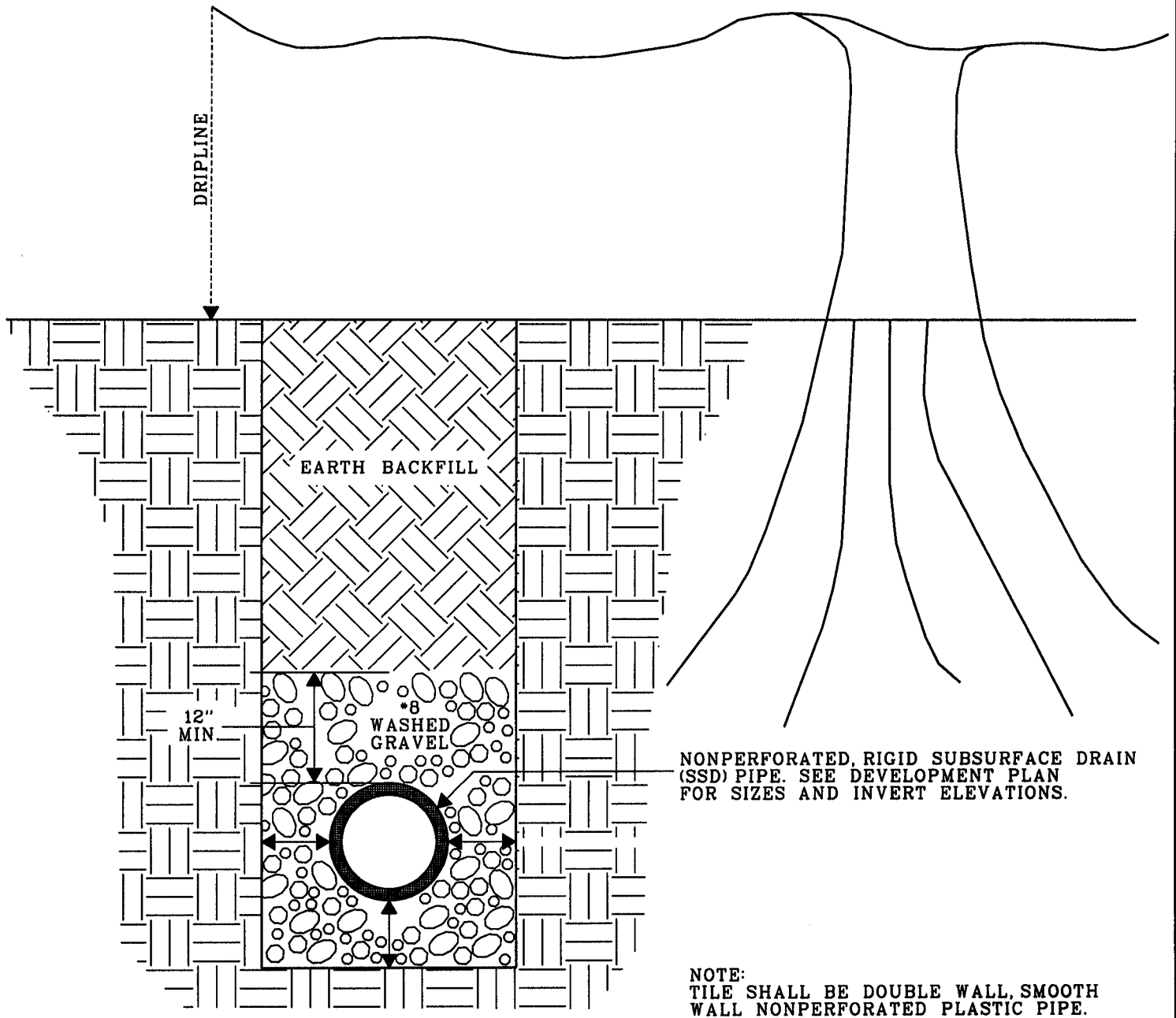
KENTON C. WARD, HAMILTON COUNTY SURVEYOR

2/1/02
DATE

REVISED: 1 FEB 2002

STANDARD PLAN
SSD-5

OFFICE OF THE HAMILTON COUNTY SURVEYOR



NONPERFORATED, RIGID SUBSURFACE DRAIN (SSD) PIPE. SEE DEVELOPMENT PLAN FOR SIZES AND INVERT ELEVATIONS.

NOTE:
TILE SHALL BE DOUBLE WALL, SMOOTH WALL NONPERFORATED PLASTIC PIPE.

SUBSURFACE DRAIN (SSD) DETAIL
WHEN WITHIN DRIPLINE OF EXISTING TREES

(DRAWING NOT TO SCALE)

HAMILTON COUNTY SURVEYOR'S OFFICE

APPROVED: _____

KENTON C. WARD, HAMILTON COUNTY SURVEYOR

2/1/02
DATE

REVISED: 1 FEB 2002

STANDARD PLAN
SSD-6

OFFICE OF THE HAMILTON COUNTY SURVEYOR

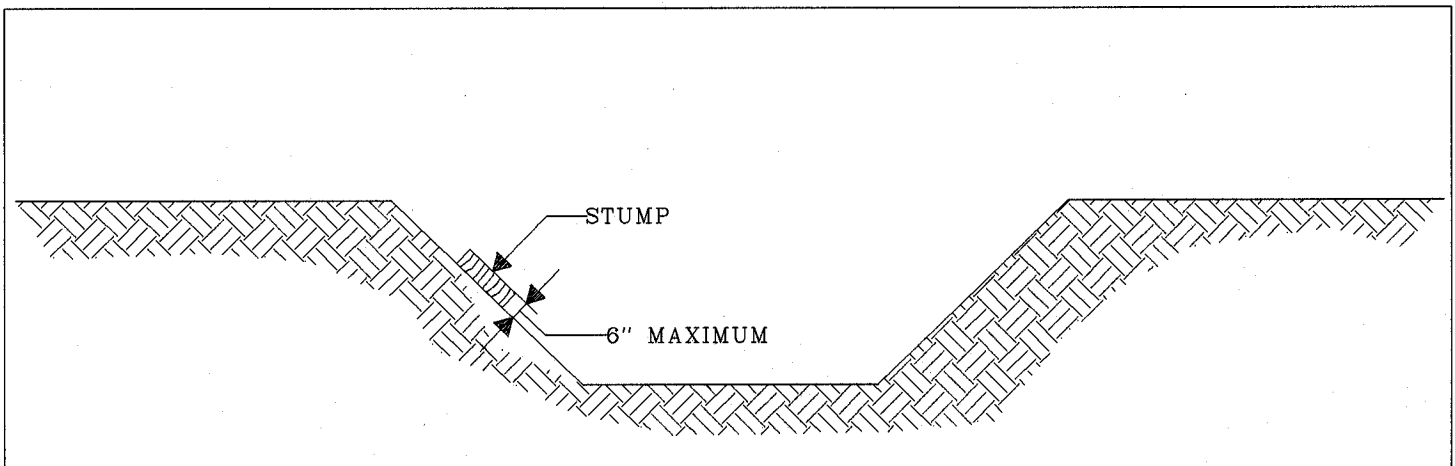
CLEARING SPECIFICATIONS

WHAT TO CLEAR

1. Clear all woody vegetation; ie, trees, willows, brush, briars and cattails.
2. Clear both ditch banks to the top of the bank. Clear the ditch bottom and remove all debris and obstructions within the channel.
3. On the working side, clear only enough room to complete the intended operation; such as spreading spoil or installing an erosion control structure. If more than 75 feet is needed, the Hamilton County Surveyor must be contacted before additional clearing can be done.

OTHER NOTES

1. Cut trees as shown in the diagram below. Cut the stump flush with the ground, no more than 6 inches high. Cut the stump at the same angle as the ditch bank.
2. Paint stumps with an approved EPA brush killer according to the contract specifications.
3. Remove stumps if the bank is resloped or for proper channel alignment.



(DRAWING NOT TO SCALE)

HAMILTON COUNTY SURVEYOR'S OFFICE

APPROVED: _____

KENTON C. WARD, HAMILTON COUNTY SURVEYOR

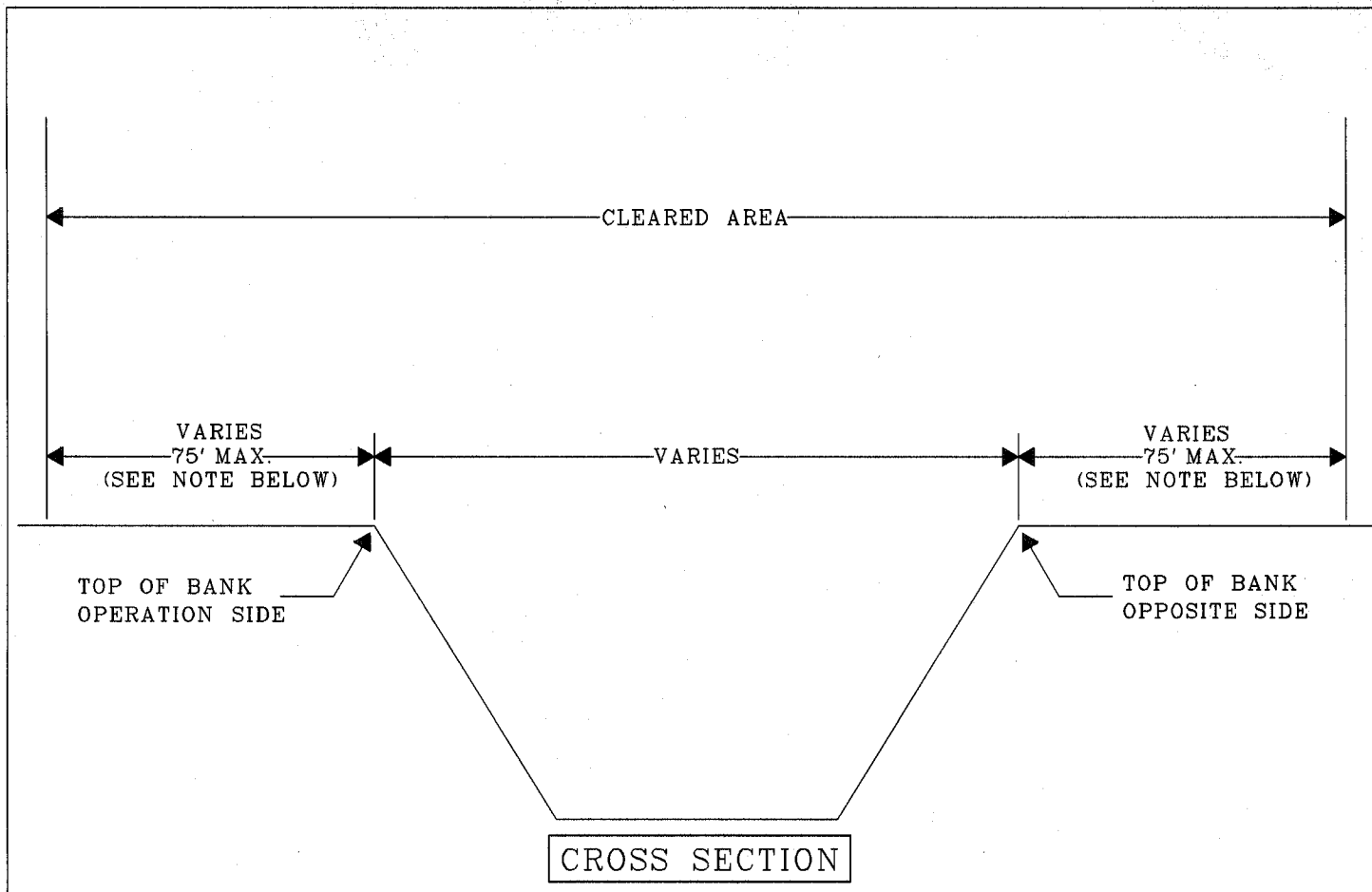
4 JAN 00
DATE

REVISED: 1 JAN 2000

STANDARD PLAN

OD-1

OFFICE OF THE HAMILTON COUNTY SURVEYOR



CLEARING

CLEARING IS TO BE DONE FROM TOP OF BANK TO TOP OF BANK,
____ FEET ON THE OPERATION SIDE AND ____ FEET ON THE
OPPOSITE SIDE.

(DRAWING NOT TO SCALE)

HAMILTON COUNTY SURVEYOR'S OFFICE

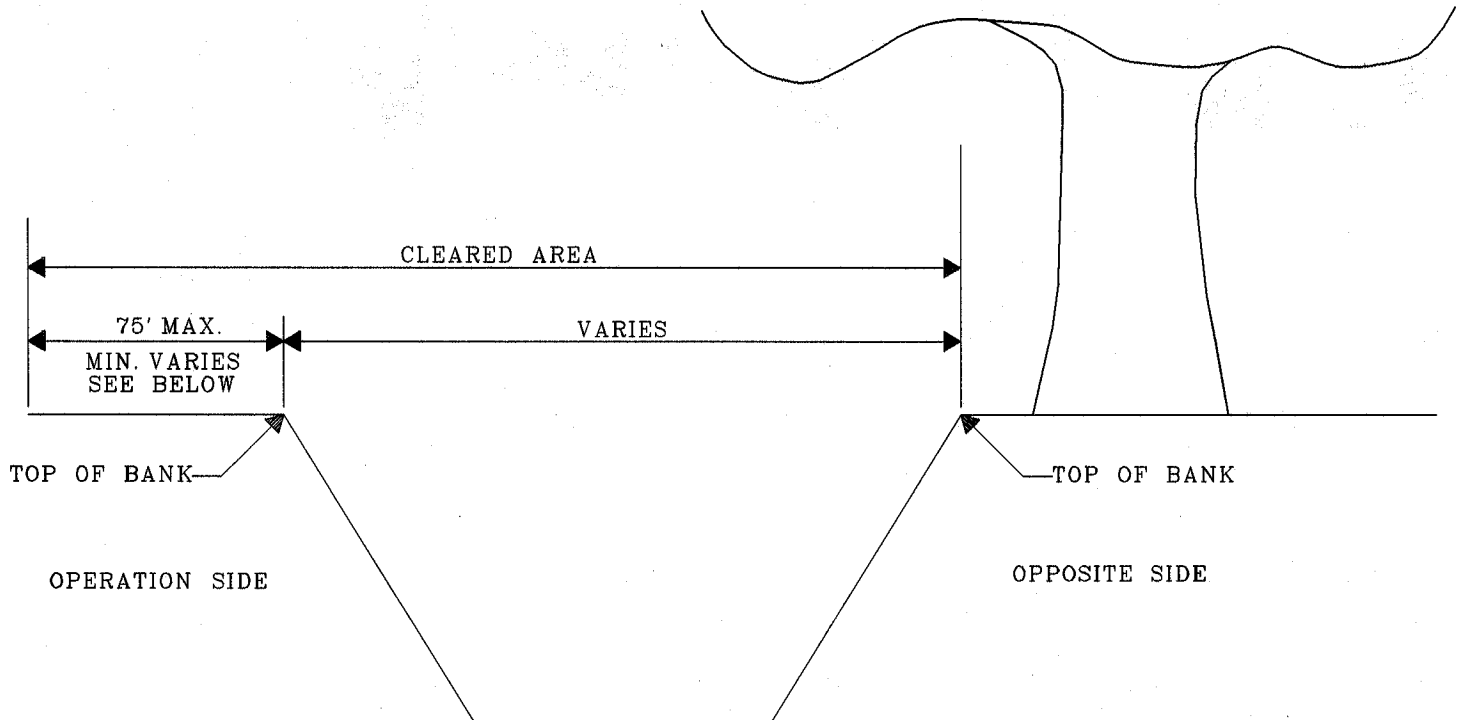
APPROVED: *Kenton C. Ward*
KENTON C. WARD, HAMILTON COUNTY SURVEYOR

4 JAN 00
DATE

REVISED: 1 JAN 2000

STANDARD PLAN
OD-2

OFFICE OF THE HAMILTON COUNTY SURVEYOR



CLEARING: CONSERVATION ALTERNATE

CLEARING UNDER THIS PLAN SHALL BE DONE FROM THE TOP OF BANK TO TOP OF BANK AND ____ FEET ON THE OPERATION SIDE OF THIS DITCH.

CLEAR ALL DEAD TREES AND TREES LEANING AT 45° OR GREATER WITHIN 5 FEET OF TOP OF BANK ON OPPOSITE SIDE OF DITCH.

(DRAWING NOT TO SCALE)

HAMILTON COUNTY SURVEYOR'S OFFICE

APPROVED: _____

KENTON C. WARD, HAMILTON COUNTY SURVEYOR

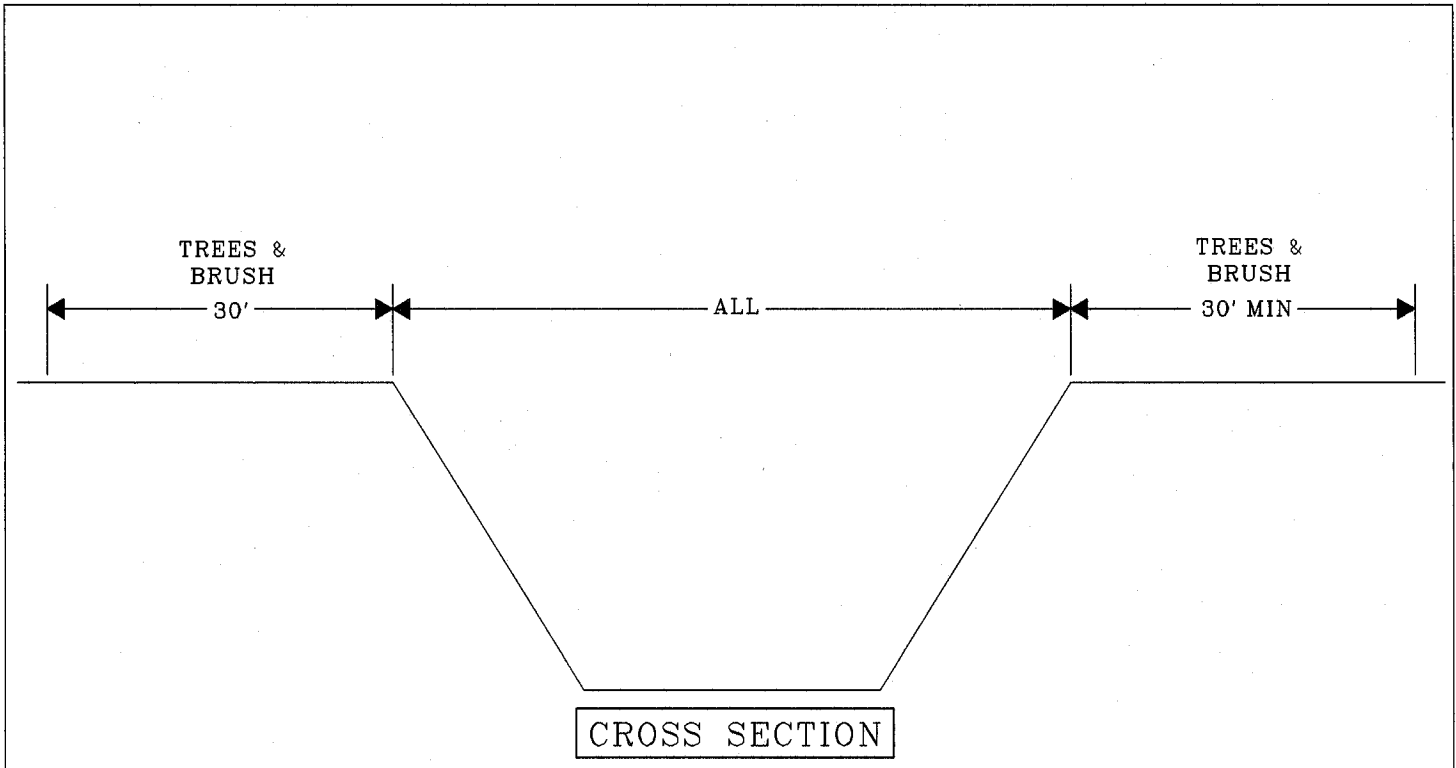
4 JAN 2000
DATE

REVISED: 1 JAN 2000

STANDARD PLAN

OD-3

OFFICE OF THE HAMILTON COUNTY SURVEYOR



SUBDIVISION CLEARING

ALL OPEN DITCHES SHALL HAVE AN ONSITE INVESTIGATION WITH THE SURVEYOR'S OFFICE PLAN REVIEWER, INSPECTOR AND DEVELOPER. TREES GREATER THAN 18" (MEASURED AT BREAST HEIGHT) MAY BE SAVED IF APPROVED BY THE INSPECTOR. THE INSPECTOR SHALL BE CONTACTED FOR INVESTIGATION PRIOR TO FINAL INSPECTION FOR DETERMINATION.

NOTE: IF ON PROPERTY LINE, USE CONSERVATION ALTERNATE.

(DRAWING NOT TO SCALE)

HAMILTON COUNTY SURVEYOR'S OFFICE

APPROVED: _____

KENTON C. WARD, HAMILTON COUNTY SURVEYOR

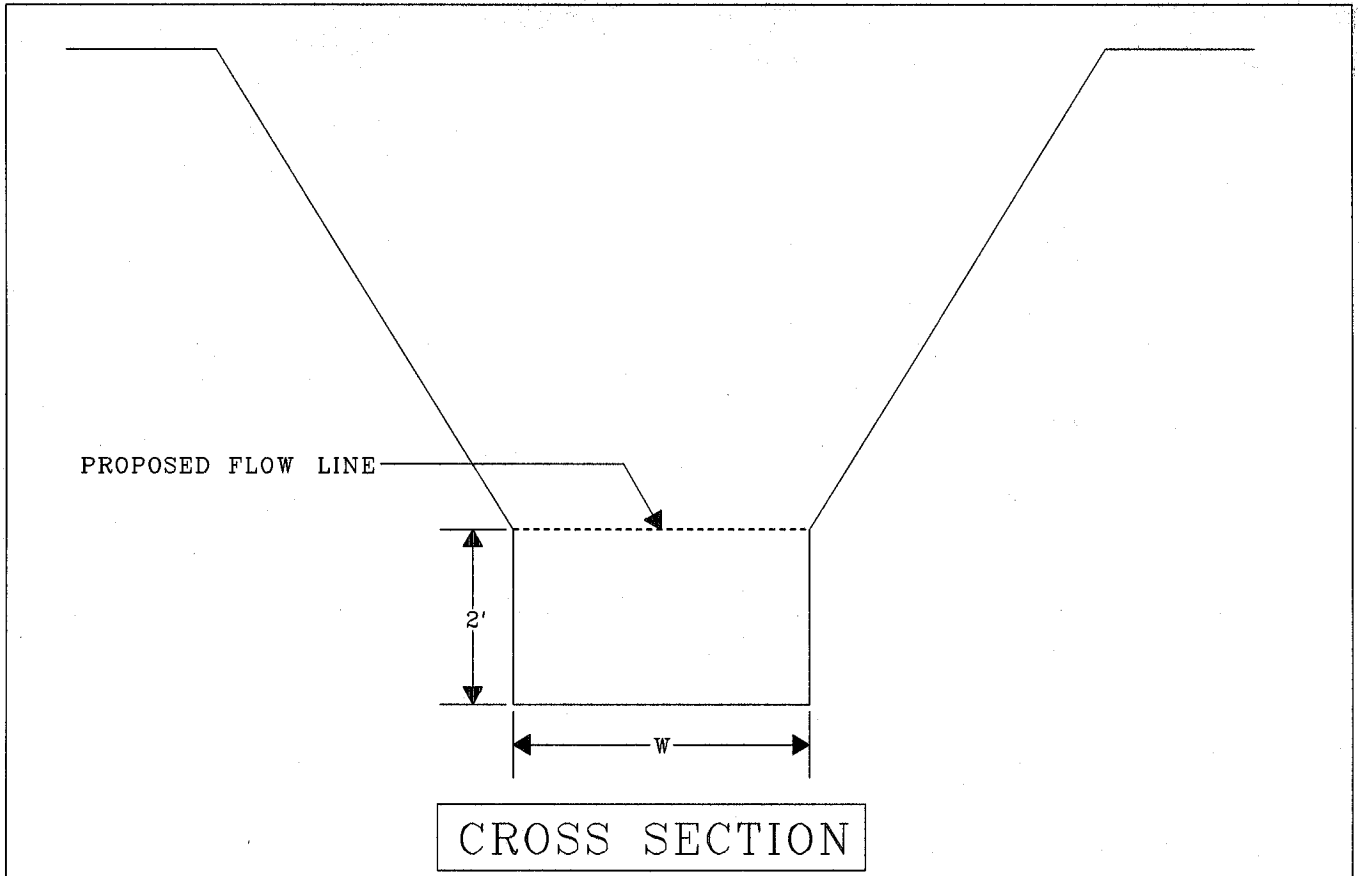
4 JAN 2000
DATE

REVISED: 1 JAN 2000

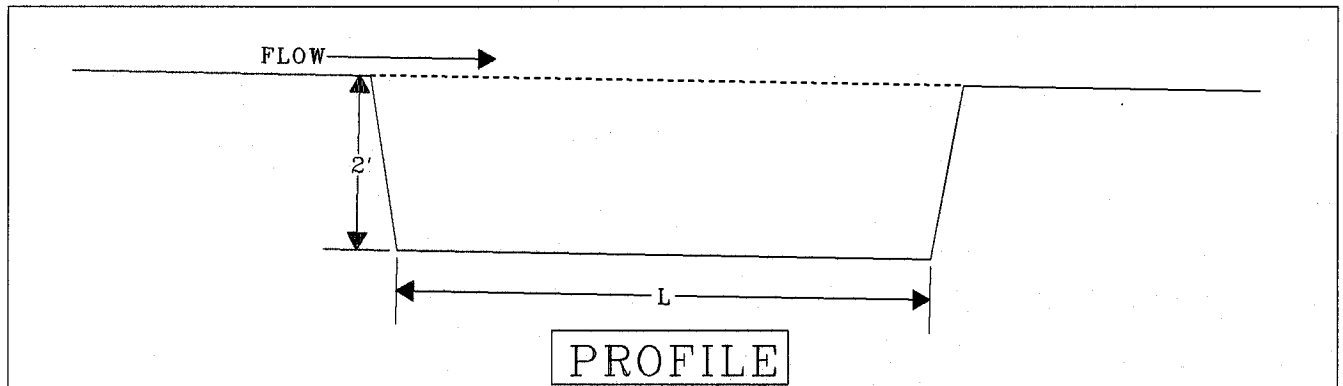
STANDARD PLAN
OD-4

OFFICE OF THE HAMILTON COUNTY SURVEYOR

SILT BASIN



W: VARIES - SEE PLAN
L: VARIES - SEE PLAN



(DRAWING NOT TO SCALE)

HAMILTON COUNTY SURVEYOR'S OFFICE

APPROVED: _____

KENTON C. WARD, HAMILTON COUNTY SURVEYOR

4 JAN 00
DATE

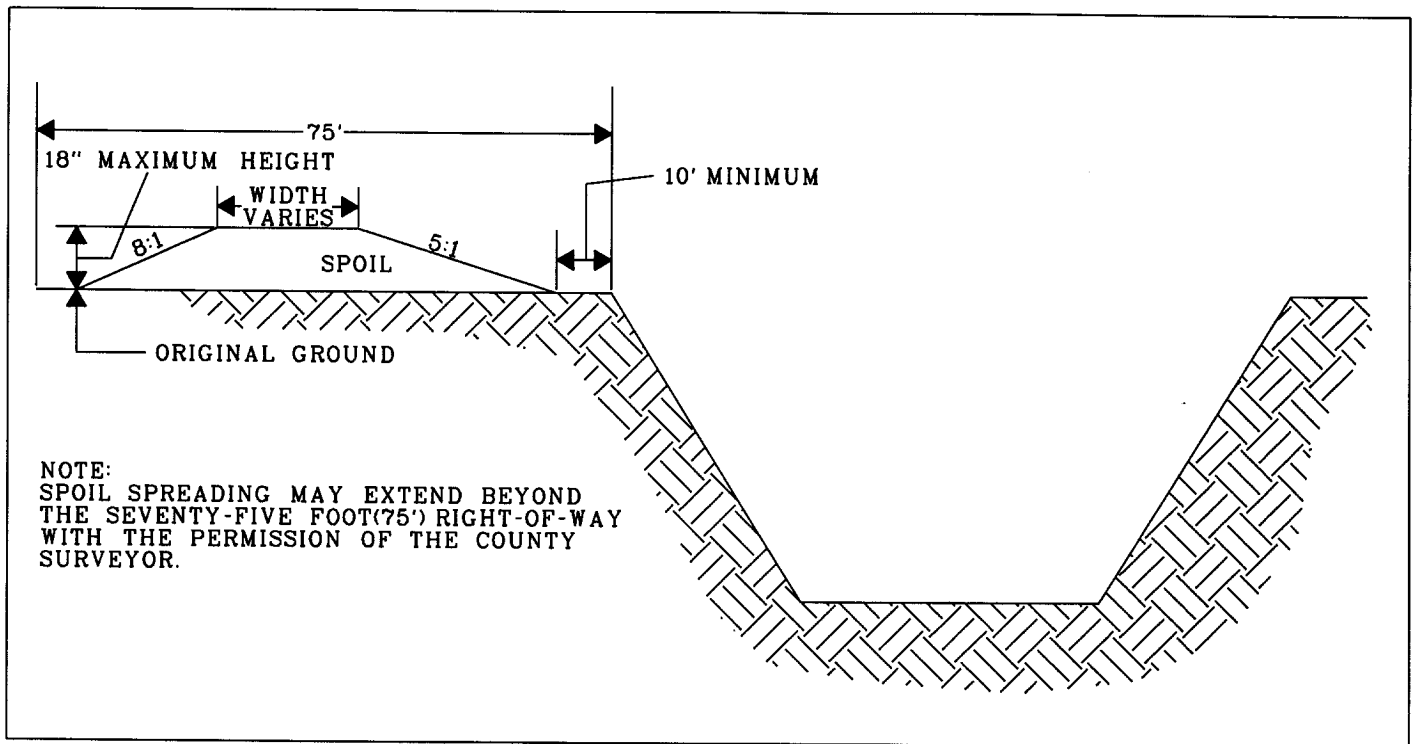
REVISED: 1 JAN 2000

STANDARD PLAN

OD-5

OFFICE OF THE HAMILTON COUNTY SURVEYOR

SPOIL SPREADING



All spoils shall be placed on the operation side of the ditch as designated by the Surveyor. The finished spoil shall be left in a smooth manner, so that maintenance equipment used to maintain the regulated drain and any average row crop farm tractor can be driven over all parts of it with a reasonable degree of safety and the finished spoil bank shall be left in a tillable manner without debris including brush, logs, excavated stumps or rocks of 1/3 of cubic foot or larger, that will interfere with farm and maintenance equipment, and filter strip placement.

(DRAWING NOT TO SCALE)

HAMILTON COUNTY SURVEYOR'S OFFICE

APPROVED: _____

KENTON C. WARD, HAMILTON COUNTY SURVEYOR

DATE

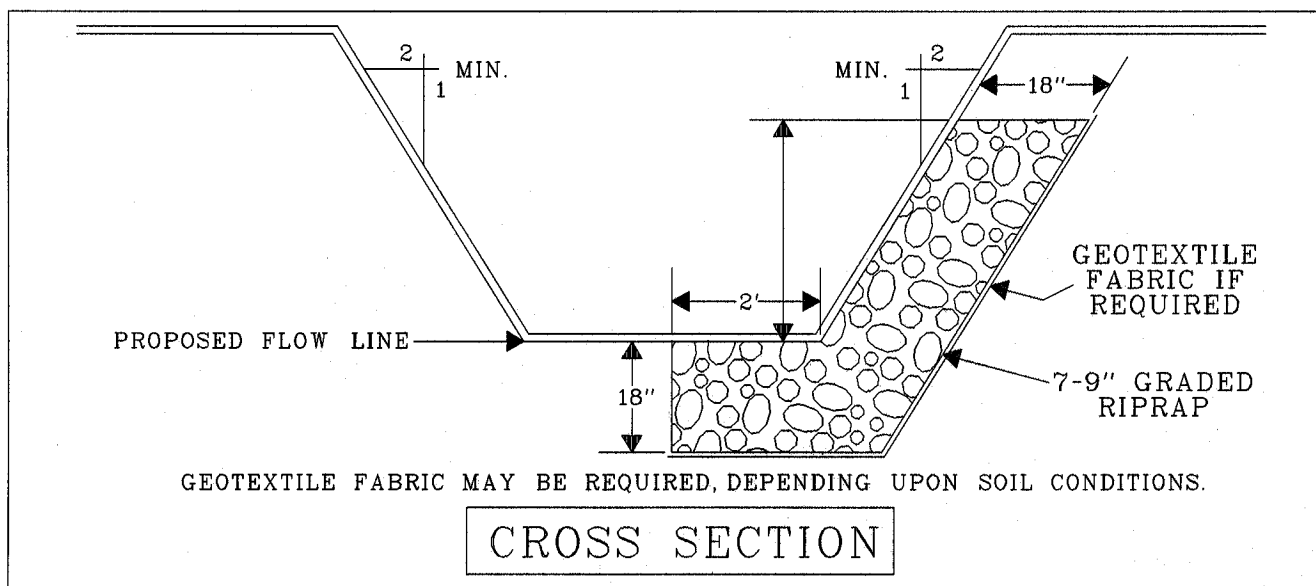
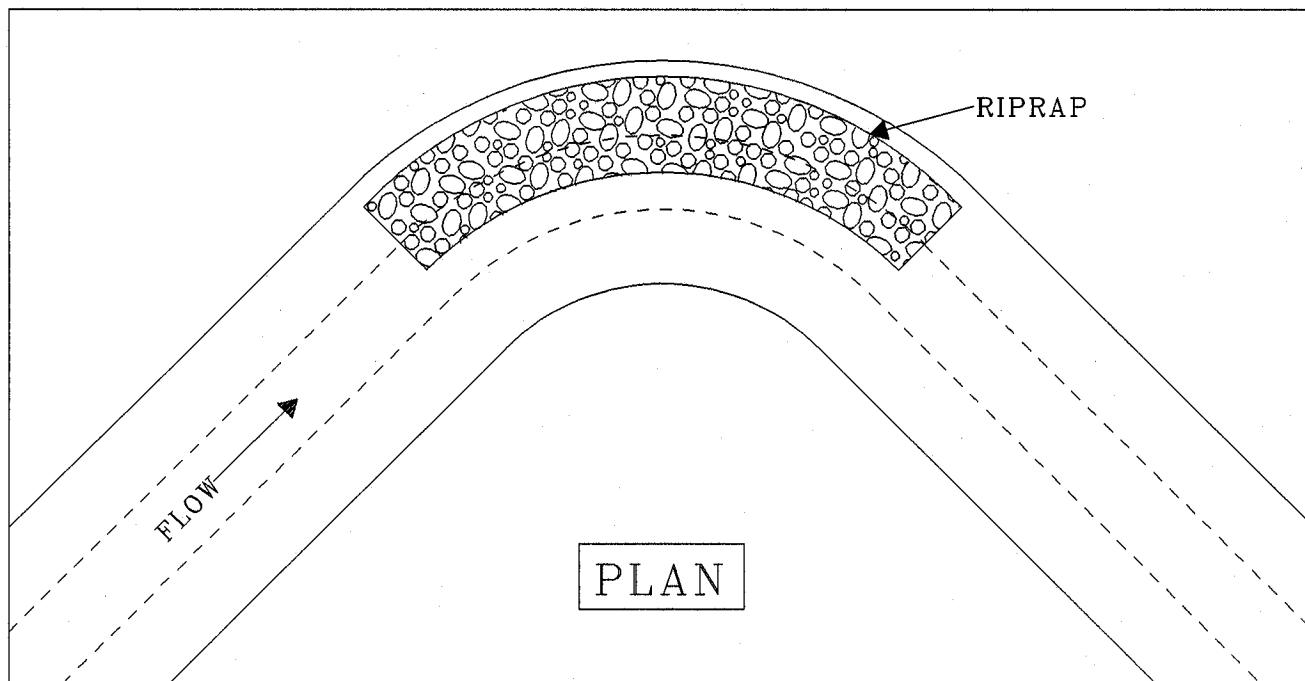
REVISED: 10/4/2006

STANDARD PLAN

OD-6

OFFICE OF THE HAMILTON COUNTY SURVEYOR

CORNER PROTECTION



(DRAWING NOT TO SCALE)

HAMILTON COUNTY SURVEYOR'S OFFICE

APPROVED:

KENTON C. WARD, HAMILTON COUNTY SURVEYOR

4 JAN 00
DATE

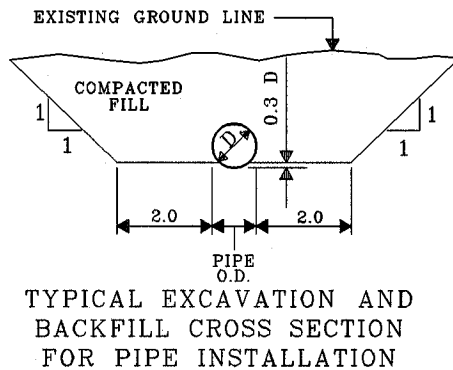
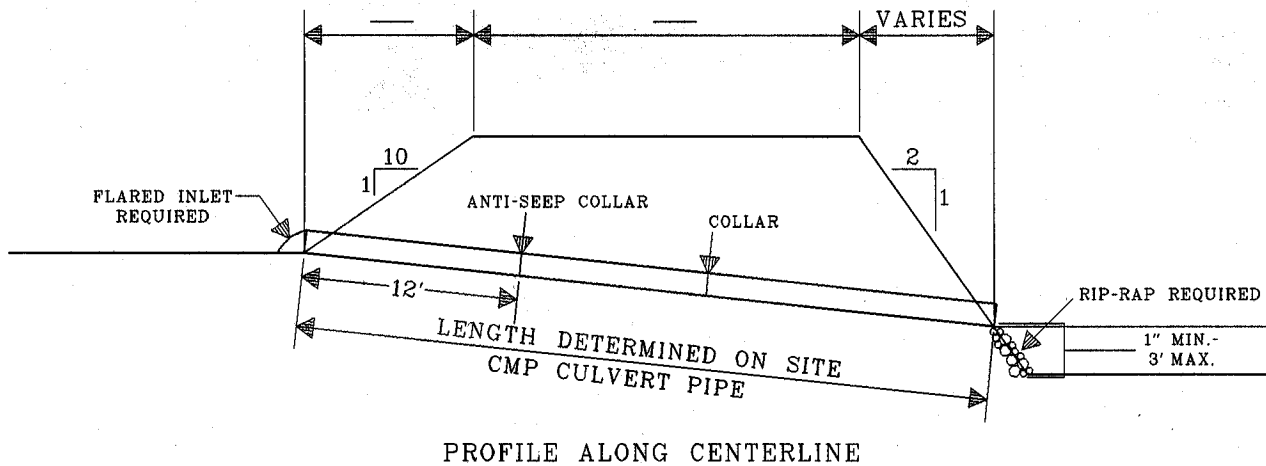
REVISED: 1 JAN 2000

STANDARD PLAN

OD-7

OFFICE OF THE HAMILTON COUNTY SURVEYOR

SURFACE WATER PIPE



DETAIL OF MATERIALS

1. PIPE: NON-PERFORATED CORRUGATED METAL CULVERT PIPE
2. END SECTIONS: STANDARD METAL FLARED END SECTION
3. ANTI-SEEP COLLAR: 4' X 4' METAL, OR POURED CONCRETE, SET BETWEEN THE CORRUGATIONS OF THE PIPE.

(DRAWING NOT TO SCALE)

HAMILTON COUNTY SURVEYOR'S OFFICE

APPROVED: _____

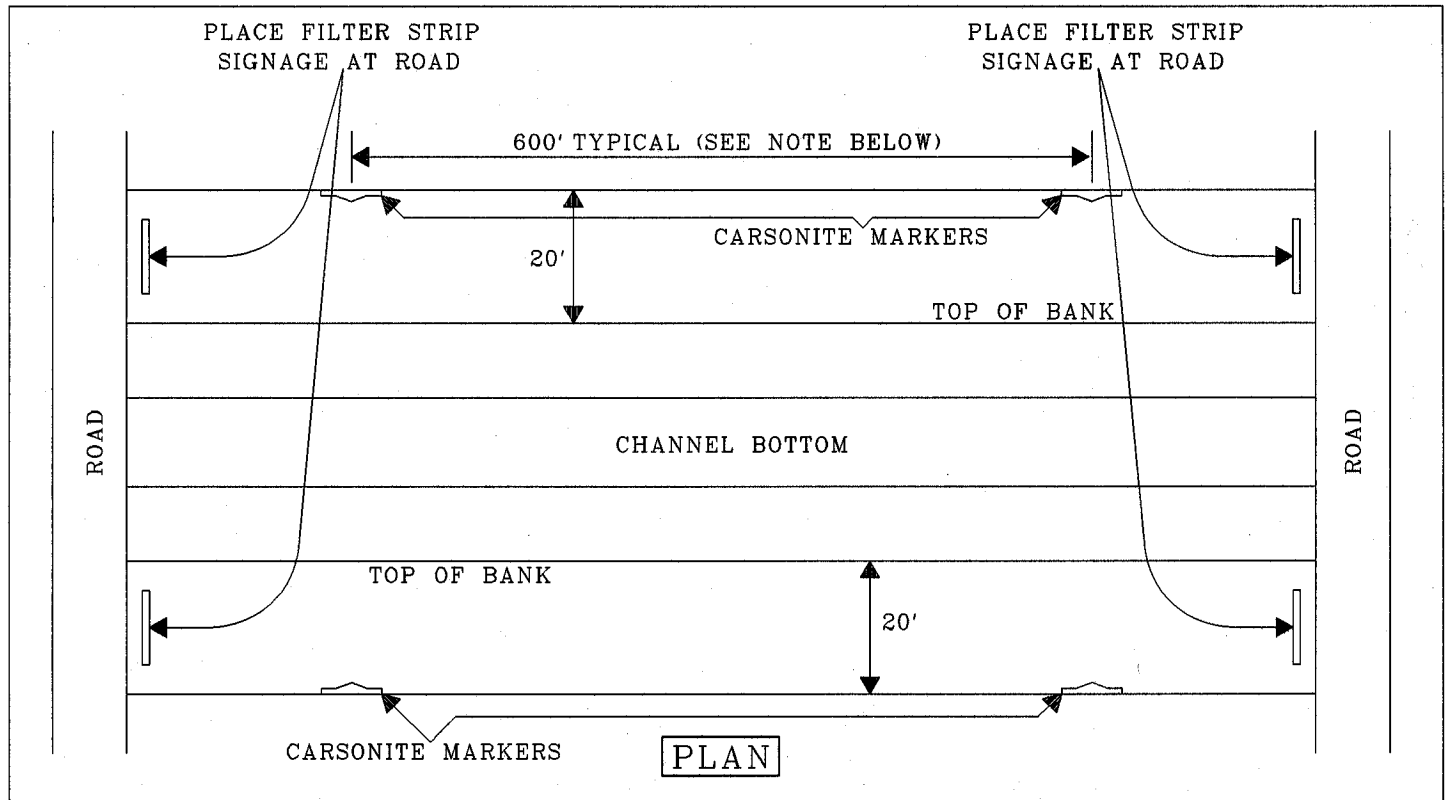
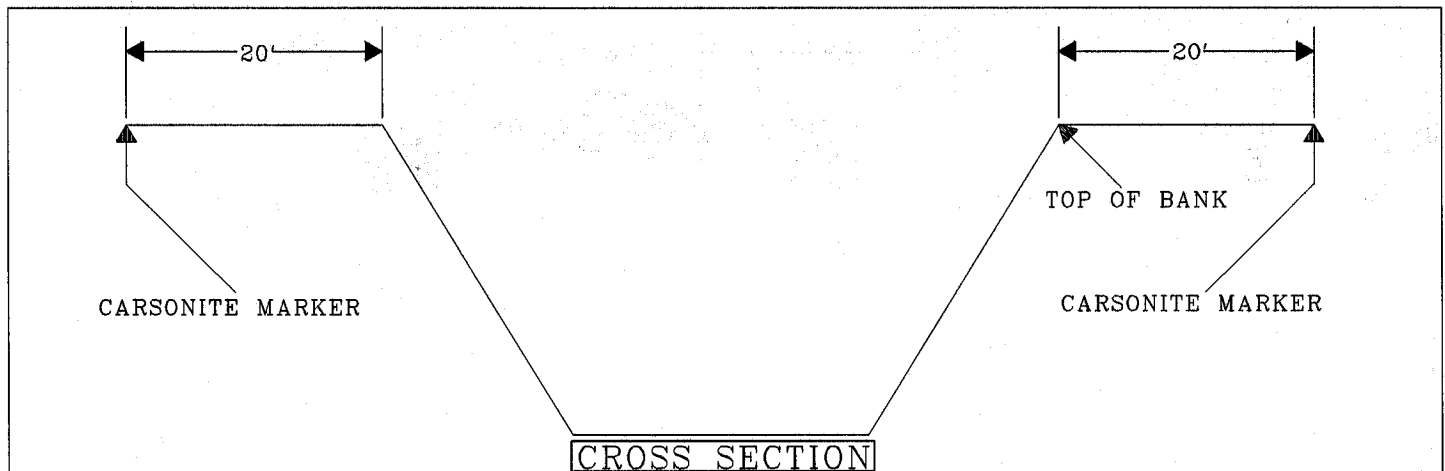
KENTON C. WARD, HAMILTON COUNTY SURVEYOR

4 JAN 00
DATE

REVISED: 1 JAN 2000

STANDARD PLAN
OD-8

OFFICE OF THE HAMILTON COUNTY SURVEYOR



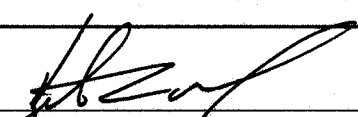
FILTER STRIP

PLACE SIGNS EVERY 600 FEET. IF DISTANCE BETWEEN ROADS IS LESS THAN 600 FEET, PLACE ONE SIGN IN CENTER POINT OF THE FILTER STRIP BETWEEN ROADS.

IF THE CONSERVATION ALTERNATE IS USED FOR CLEARING.
FILTER STRIP WILL BE ON OPERATION SIDE ONLY.

(DRAWING NOT TO SCALE)

HAMILTON COUNTY SURVEYOR'S OFFICE

APPROVED: 
KENTON C. WARD, HAMILTON COUNTY SURVEYOR

4 JAN 2000
DATE

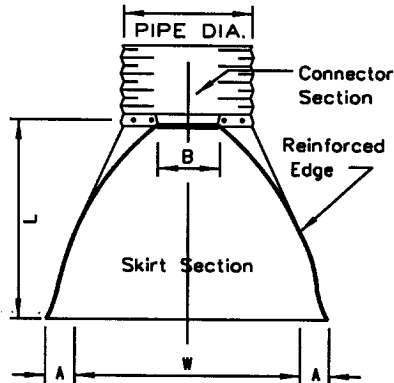
REVISED: 1 JAN 2000

STANDARD PLAN
OD-9

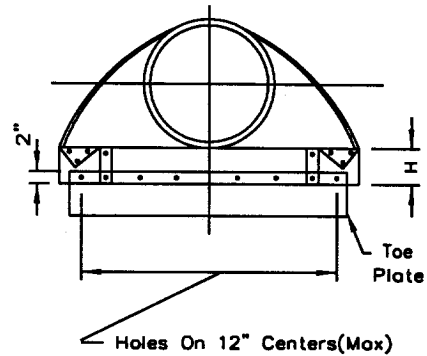
OFFICE OF THE HAMILTON COUNTY SURVEYOR

For Use on CMP in Agricultural Areas Only

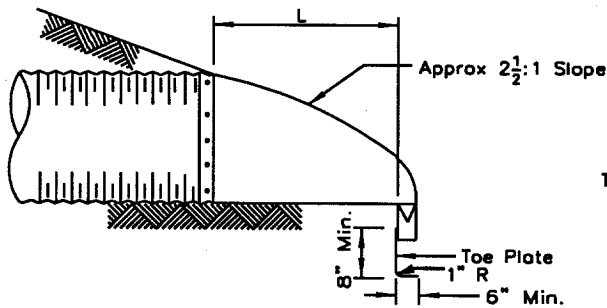
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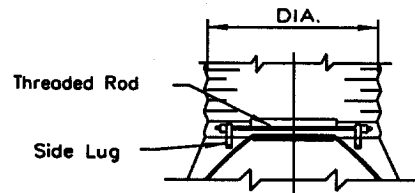
PLAN VIEW



ELEVATION



TYPICAL CROSS SECTION



ALTERNATE CONNECTION

PIPE DIA	SHEET THICKNESS	DIMENSIONS				
		A (+/- 1")	B (Max.)	H (+/- 1")	L (+/- 1/2")	W (+/- 2")
12"	.064"	6"	6"	6"	21"	24"
15"	.064"	7"	8"	6"	26"	30"
18"	.064"	8"	10"	6"	31"	36"
24"	.064"	10"	13"	6"	41"	48"
30"	.079"	12"	16"	8"	51"	60"
36"	.079"	14"	19"	9"	60"	72"
42"	.109"	16"	22"	11"	69"	84"
48"	.109"	18"	27"	12"	78"	90"
54"	.109"	18"	30"	12"	84"	102"
60"	.109"-.138"	18"	33"	12"	87"	114"

NOTES:

1. Toe plate to be punched to match holes in skirt lip. 3/8" galv. bolts to be furnished. Length of toe plate is W+10" for 12" to 30" dia. pipe and W+22" for 36" to 60" dia. pipe.
2. Skirt section for 12" to 30" dia. pipe to be made in one piece.
3. Skirt section for 36" to 54" pipe to be made from two sheets joined by riveting or bolting on center line, 60" may be constructed in 3 pieces.
4. Connector section, corner plate and toe plate to be same sheet thickness as skirt.
5. End sections and fittings are to be galvanized steel or aluminum alloy for use with like pipe.
6. Where flared end sections are to be used with bituminous coated and paved metal pipe, they are to be galvanized only.

HAMILTON COUNTY SURVEYOR'S OFFICE

Metal End Section

REVISED: 7 DEC 2006

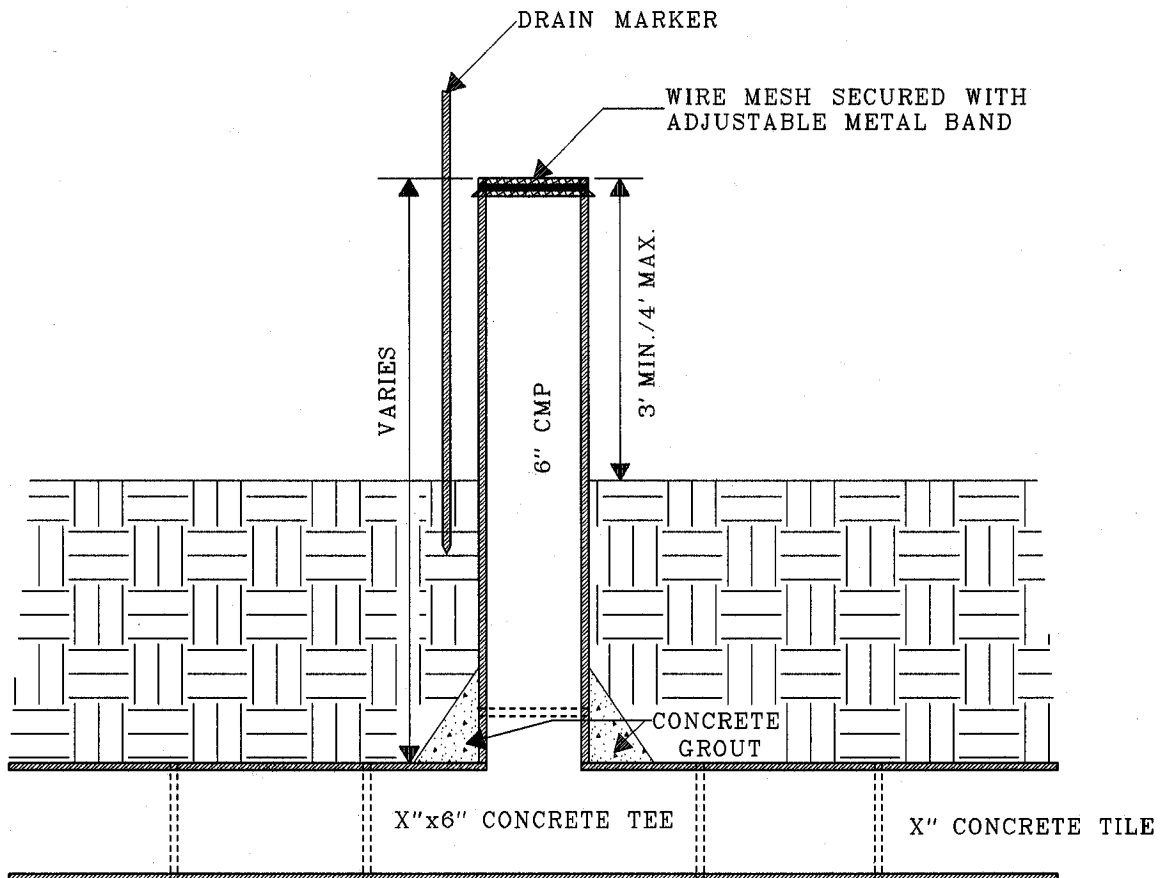
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KENTON C. WARD, HAMILTON COUNTY SURVEYOR

7 DEC 06
DATE

STANDARD PLAN
OD-10

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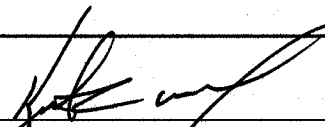


NOTE: ADAPTER MAY BE REQUIRED FOR 6" CMP TO "T".

BREATHER DETAIL FOR CONCRETE TILE

(DRAWING NOT TO SCALE)

HAMILTON COUNTY SURVEYOR'S OFFICE

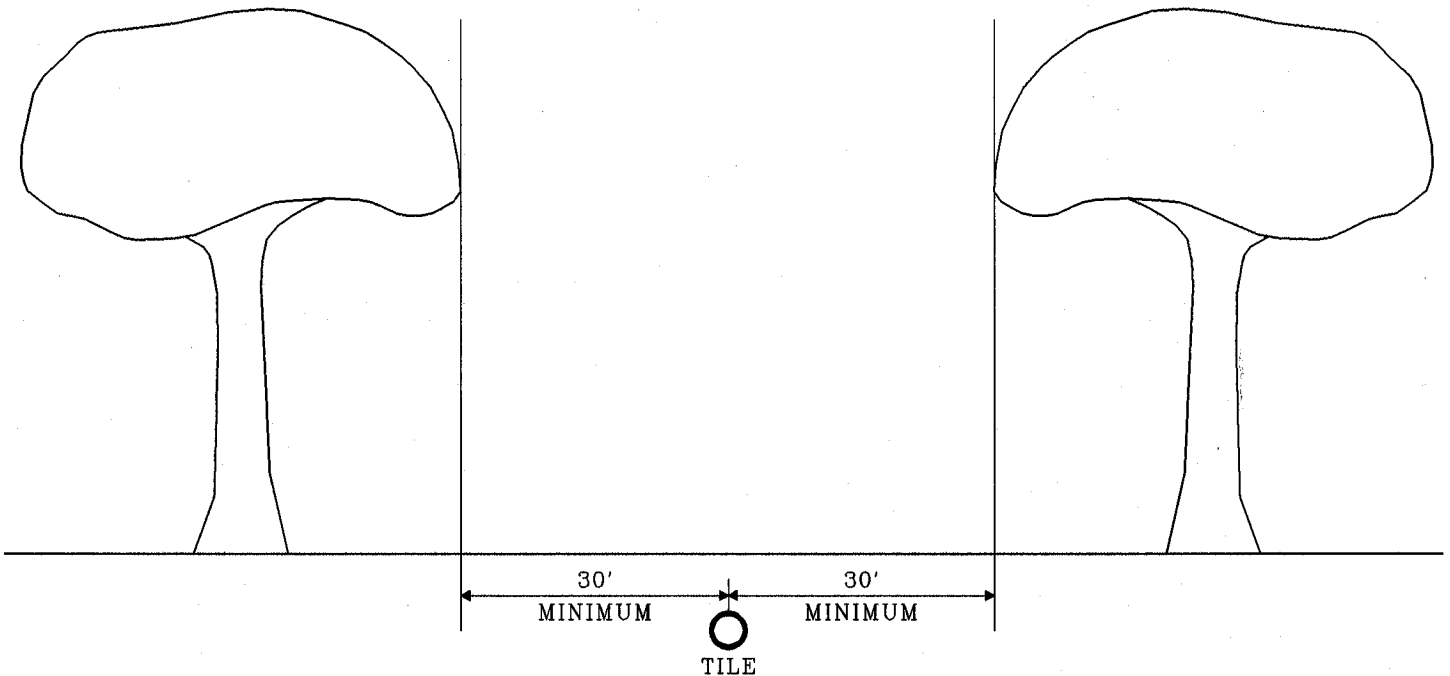
APPROVED: 
KENTON C. WARD, HAMILTON COUNTY SURVEYOR

4 JAN 00
DATE

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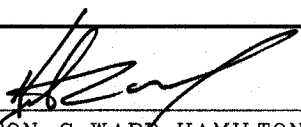
STANDARD PLAN
T-1

TILE CLEARING THROUGH WOODS



(DRAWING NOT TO SCALE)

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DATE

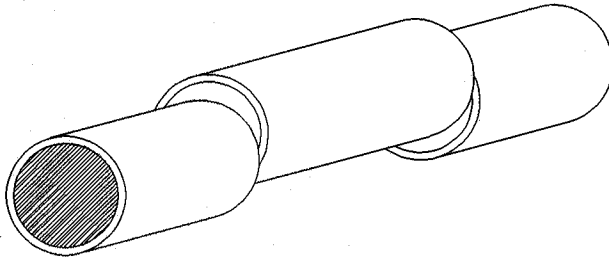
REVISED: 1 JAN 2000

STANDARD PLAN

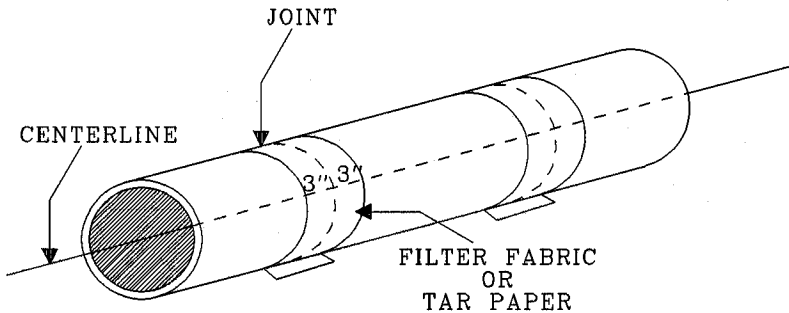
T-2

OFFICE OF THE HAMILTON COUNTY SURVEYOR

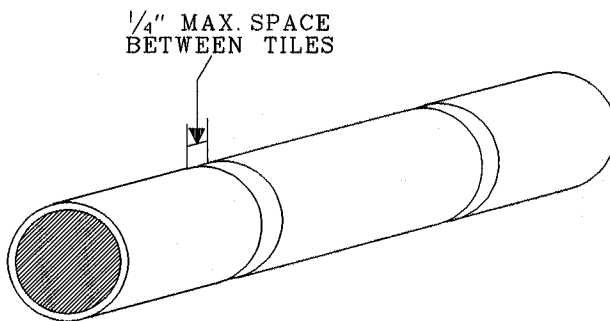
BUTT JOINT



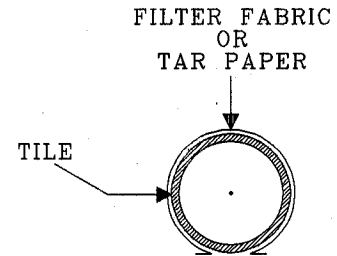
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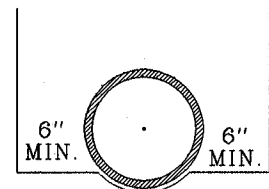
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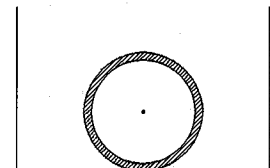
CROSS SECTIONS



TRENCH EXCAVATIONS



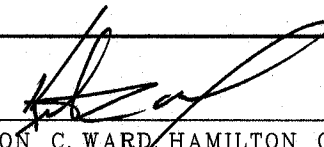
CORRECT



INCORRECT

(DRAWING NOT TO SCALE)

HAMILTON COUNTY SURVEYOR'S OFFICE

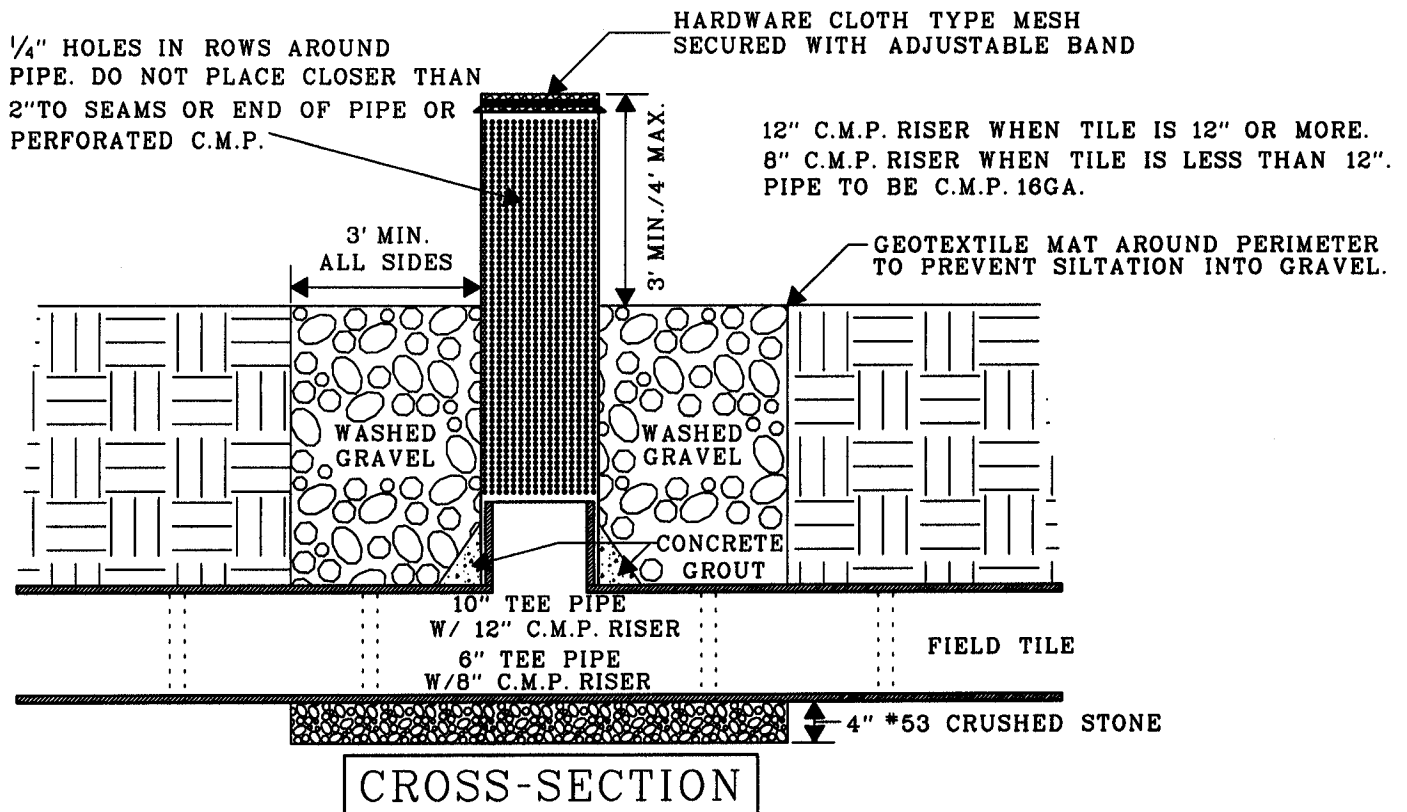
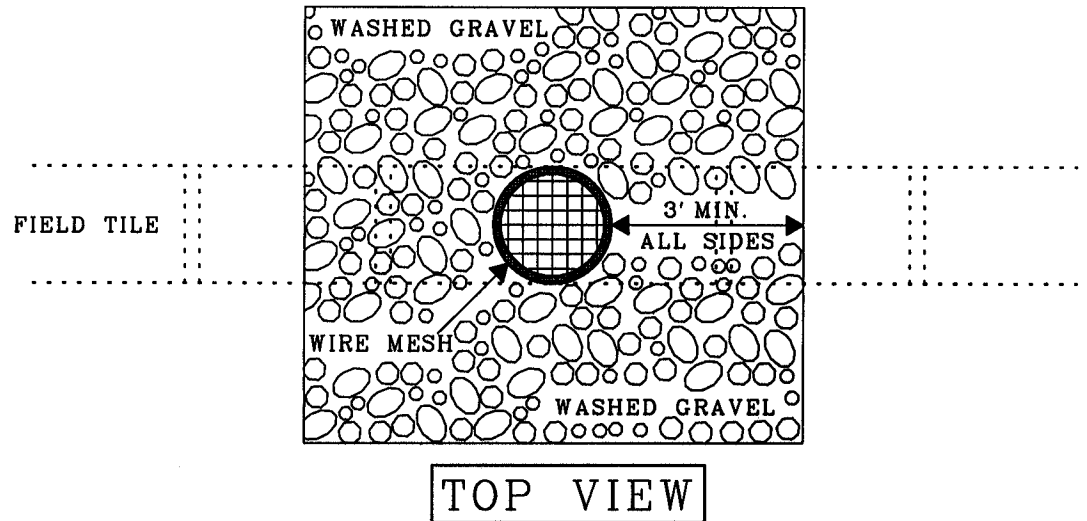
APPROVED: 
KENTON C. WARD, HAMILTON COUNTY SURVEYOR

4 JAN 00
DATE

REVISED: 1 JAN 2000

STANDARD PLAN
T-3

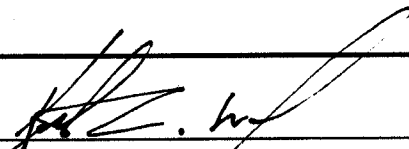
OFFICE OF THE HAMILTON COUNTY SURVEYOR



SLOTTED RISER INLET DETAIL

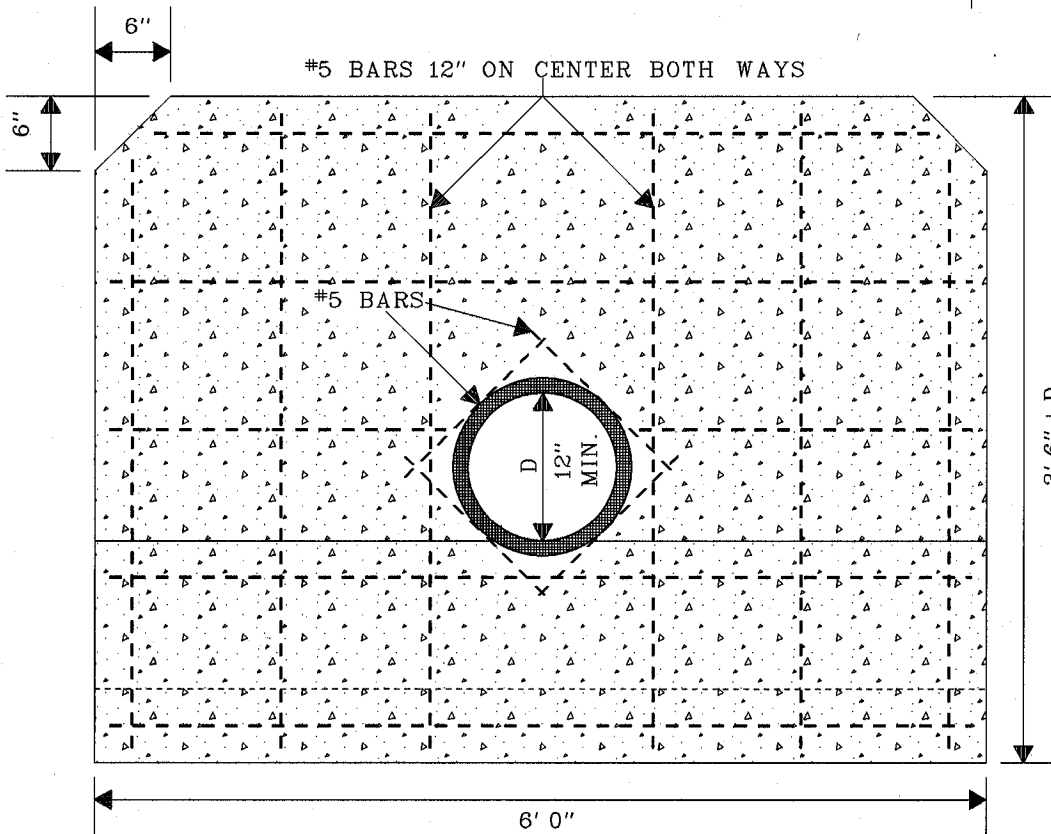
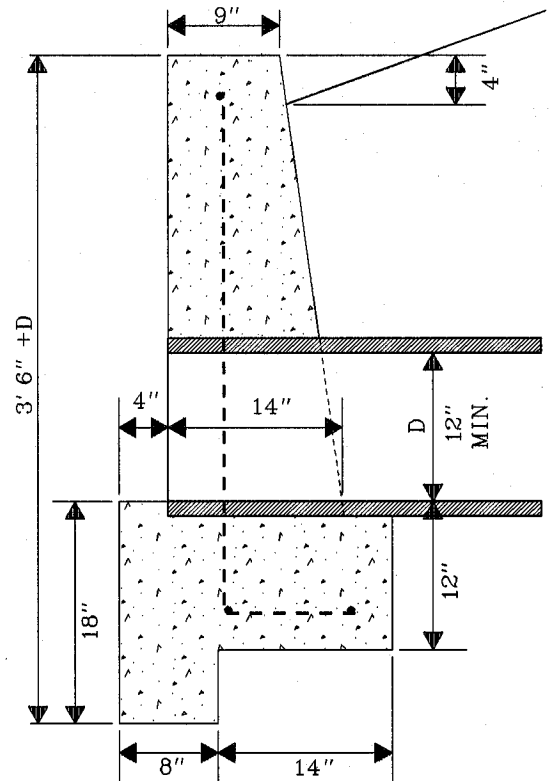
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HAMILTON COUNTY SURVEYOR'S OFFICE

APPROVED: 		REVISED: 1 FEB 2002
KENTON E. WARD, HAMILTON COUNTY SURVEYOR		STANDARD PLAN T-4
2/1/02 DATE		

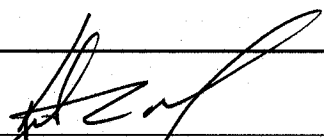
OFFICE OF THE HAMILTON COUNTY SURVEYOR

STRAIGHT HEADWALL



(DRAWING NOT TO SCALE)

HAMILTON COUNTY SURVEYOR'S OFFICE

APPROVED: 
KENTON C. WARD, HAMILTON COUNTY SURVEYOR

4 JAN 00
DATE

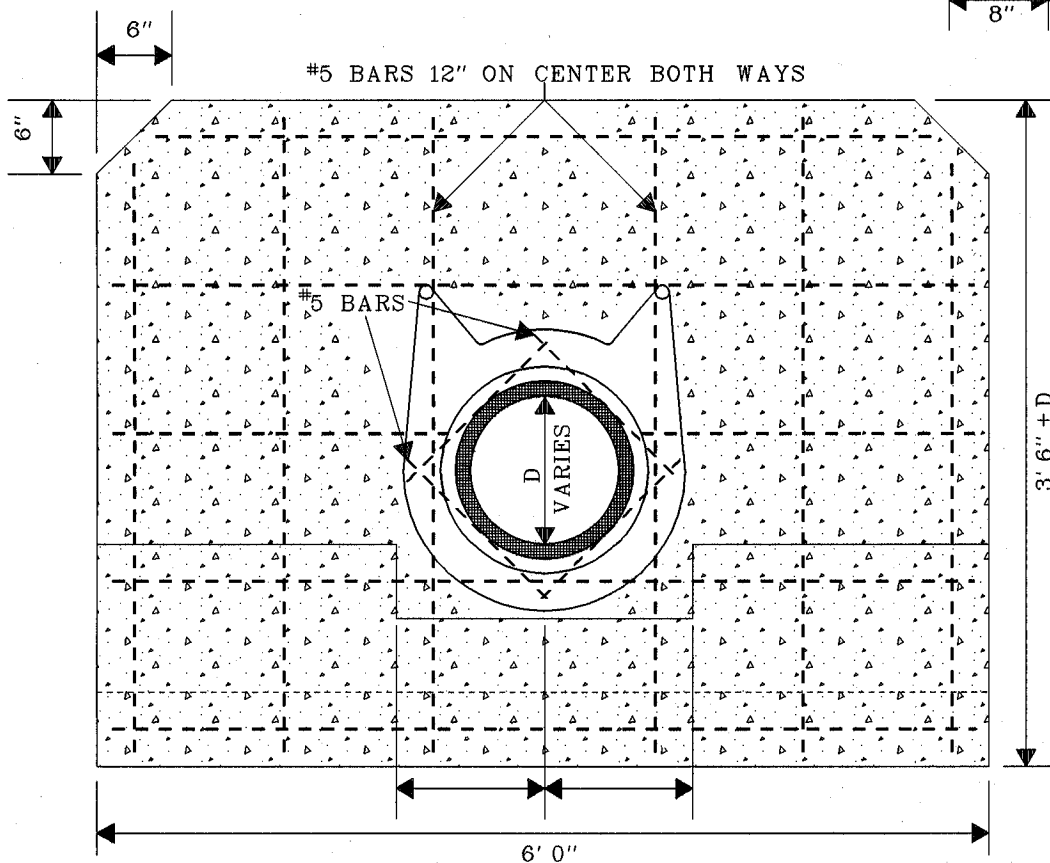
REVISED: 1 JAN 2000

STANDARD PLAN
D-1

STRAIGHT HEADWALL WITH FLAP GATE

Technical drawing of a wall section showing dimensions and materials. The drawing includes a cross-section of a wall with a concrete base and a brick upper section. Key dimensions and features include:

- Overall height: $3' 6'' + D$
- Base width: $8''$ and $14''$
- Base thickness: $12''$
- Brick section height: D (labeled VARIES)
- Brick section width: $14''$
- Brick section thickness: $4''$
- Top width: $9''$
- Top thickness: $4''$
- Material patterns: Concrete (stippled), Brick (cross-hatched), and Mortar (diagonal lines).



HAMILTON COUNTY SURVEYOR'S OFFICE

REVISÉ: 1 JAN 2000

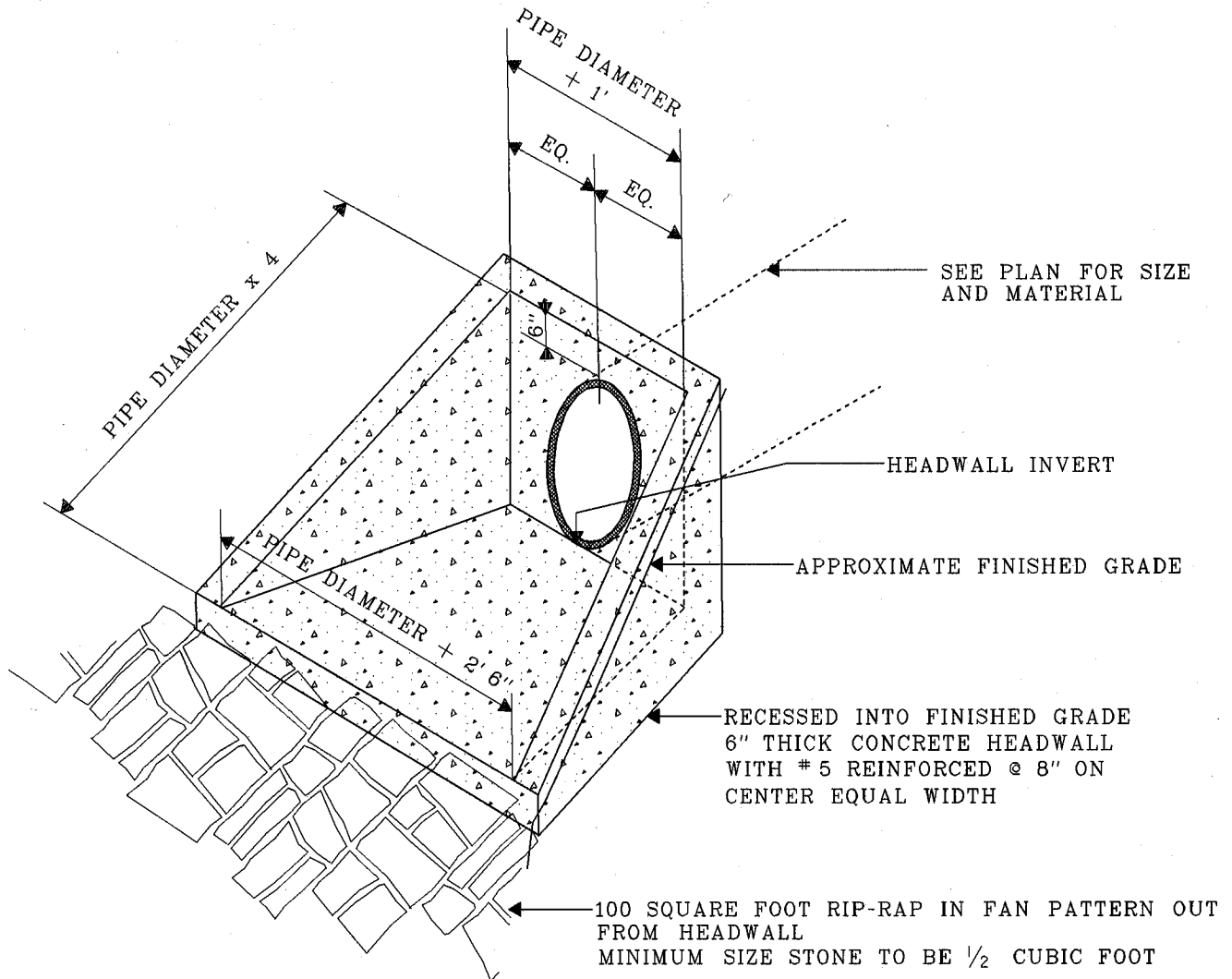
APPROVED:

KENTON C. WARD, HAMILTON COUNTY SURVEYOR

4 JAN 00
DATE

STANDARD PLAN
D-2

OFFICE OF THE HAMILTON COUNTY SURVEYOR



ISOMETRIC @ HEADWALL TYPE "I"

(DRAWING NOT TO SCALE)

HAMILTON COUNTY SURVEYOR'S OFFICE

APPROVED:

KENTON C. WARD, HAMILTON COUNTY SURVEYOR

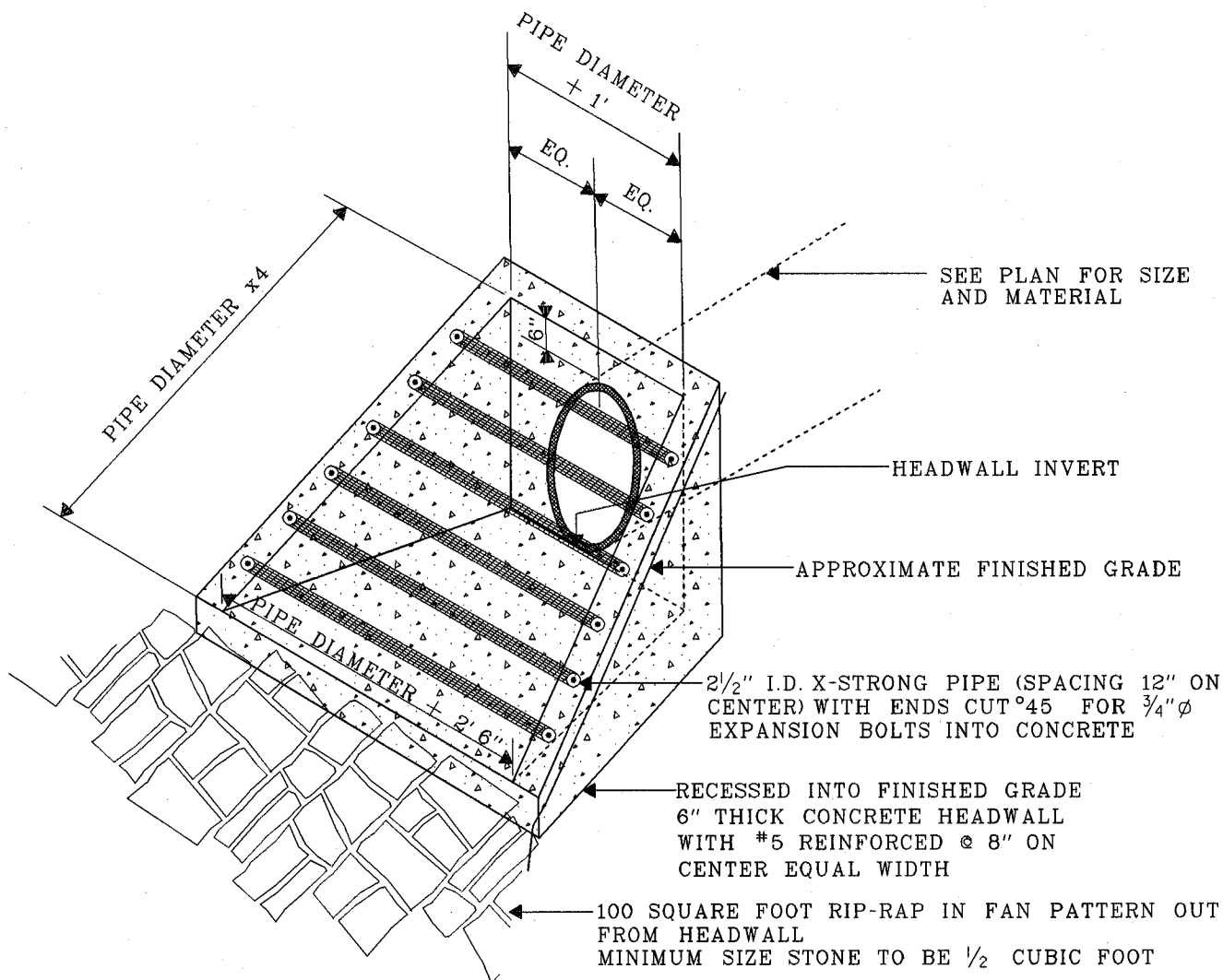
4 Jan 00
DATE

REVISED: 1 JAN 2000

STANDARD PLAN

D-3

OFFICE OF THE HAMILTON COUNTY SURVEYOR



NOTE: HEADWALL SIMILAR TO TYPE "I" EXCEPT FOR PIPE GUARDS

ISOMETRIC @ HEADWALL TYPE "II"

(DRAWING NOT TO SCALE)

HAMILTON COUNTY SURVEYOR'S OFFICE

APPROVED: _____

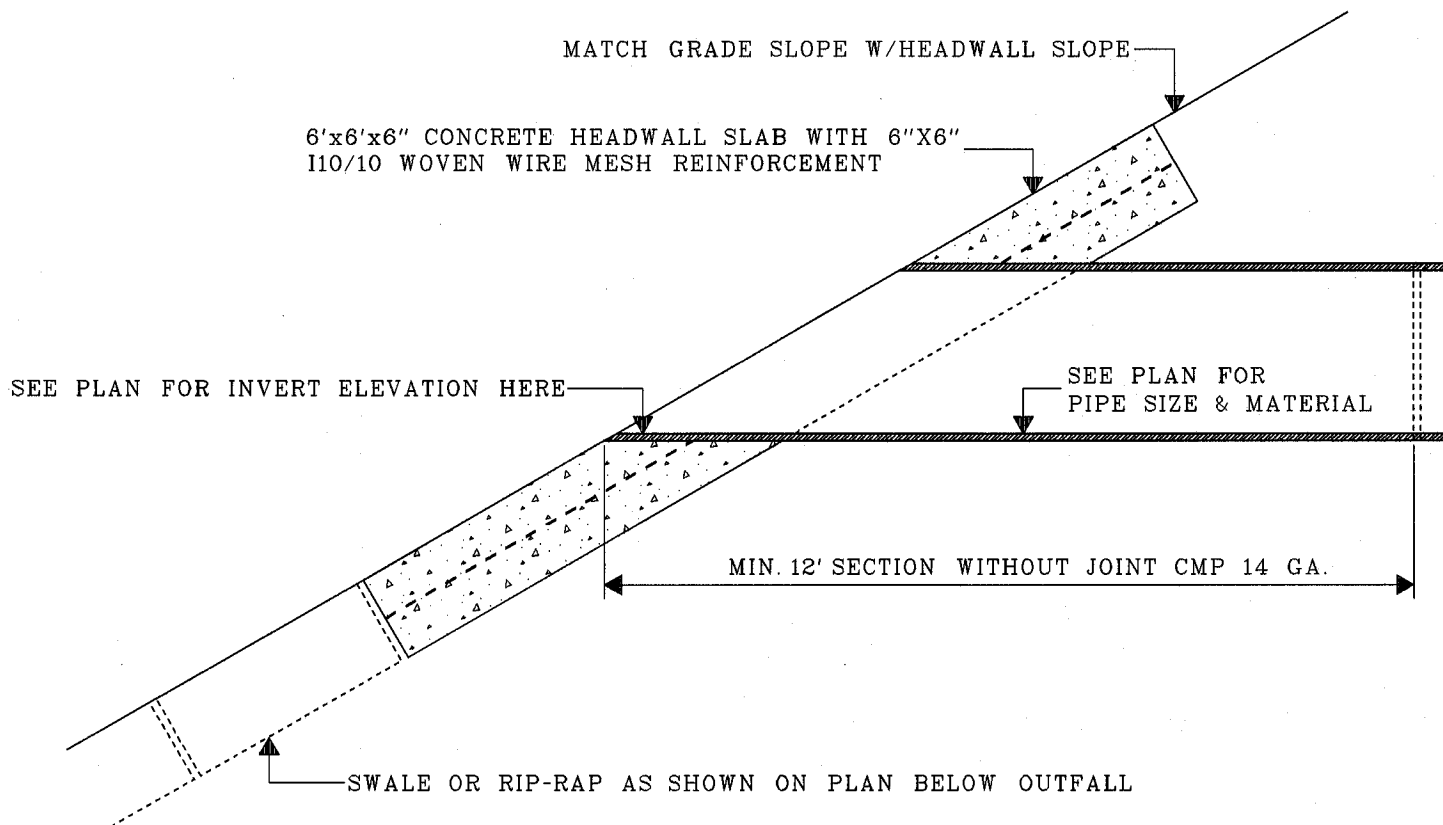
KENTON C. WARD, HAMILTON COUNTY SURVEYOR

4 Jan 00
DATE

REVISED: 1 JAN 2000

STANDARD PLAN
D-4

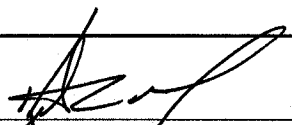
OFFICE OF THE HAMILTON COUNTY SURVEYOR



HEADWALL TYPE "III"
(SECTION VIEW)

(DRAWING NOT TO SCALE)

HAMILTON COUNTY SURVEYOR'S OFFICE

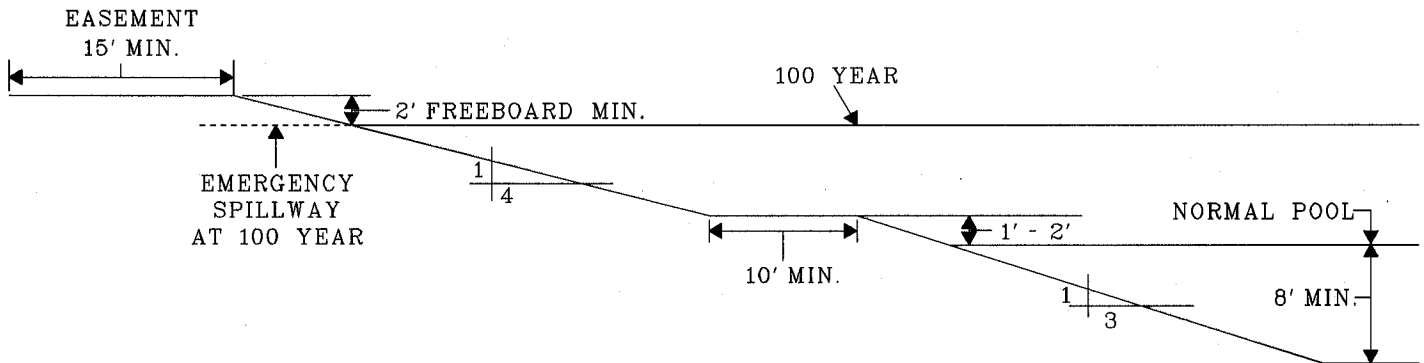
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4 JAN 00
DATE

REVISED: 1 JAN 2000

STANDARD PLAN
D-5

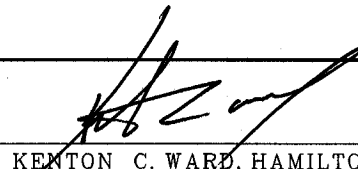
LAKE CROSS-SECTIONS
OPTION 1



USE OUTLET OPTION 1

(DRAWING NOT TO SCALE)

HAMILTON COUNTY SURVEYOR'S OFFICE

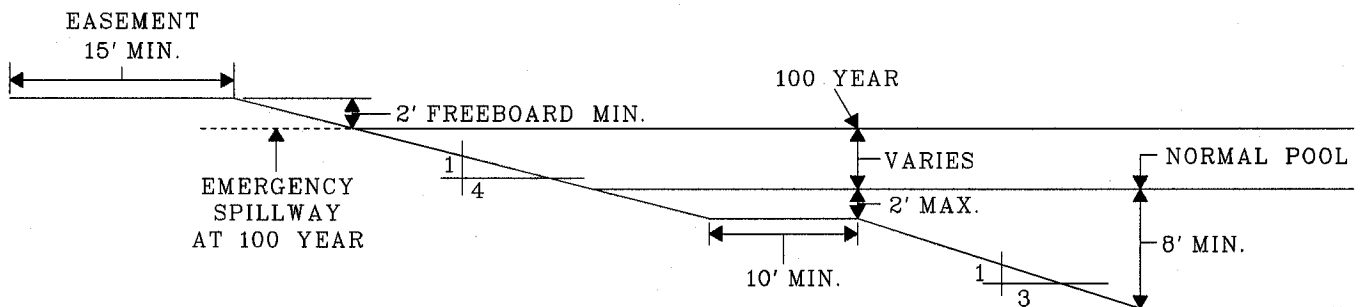
APPROVED: 
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4 Jan 00
DATE

REVISED: 1 JAN 2000

STANDARD PLAN
D-6

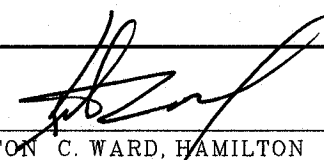
LAKE CROSS-SECTIONS
OPTION 2



USE OUTLET OPTION 2

(DRAWING NOT TO SCALE)

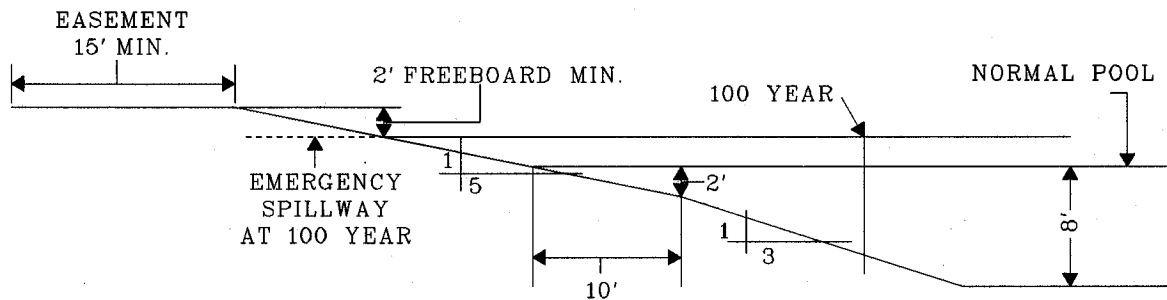
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4 JAN 2000
DATE

REVISED: 1 JAN 2000

STANDARD PLAN
D-7

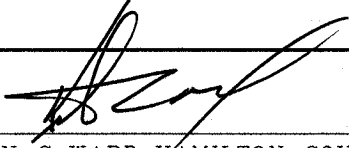
LAKE CROSS-SECTIONS
OPTION 3



USE OUTLET OPTION 3

(DRAWING NOT TO SCALE)

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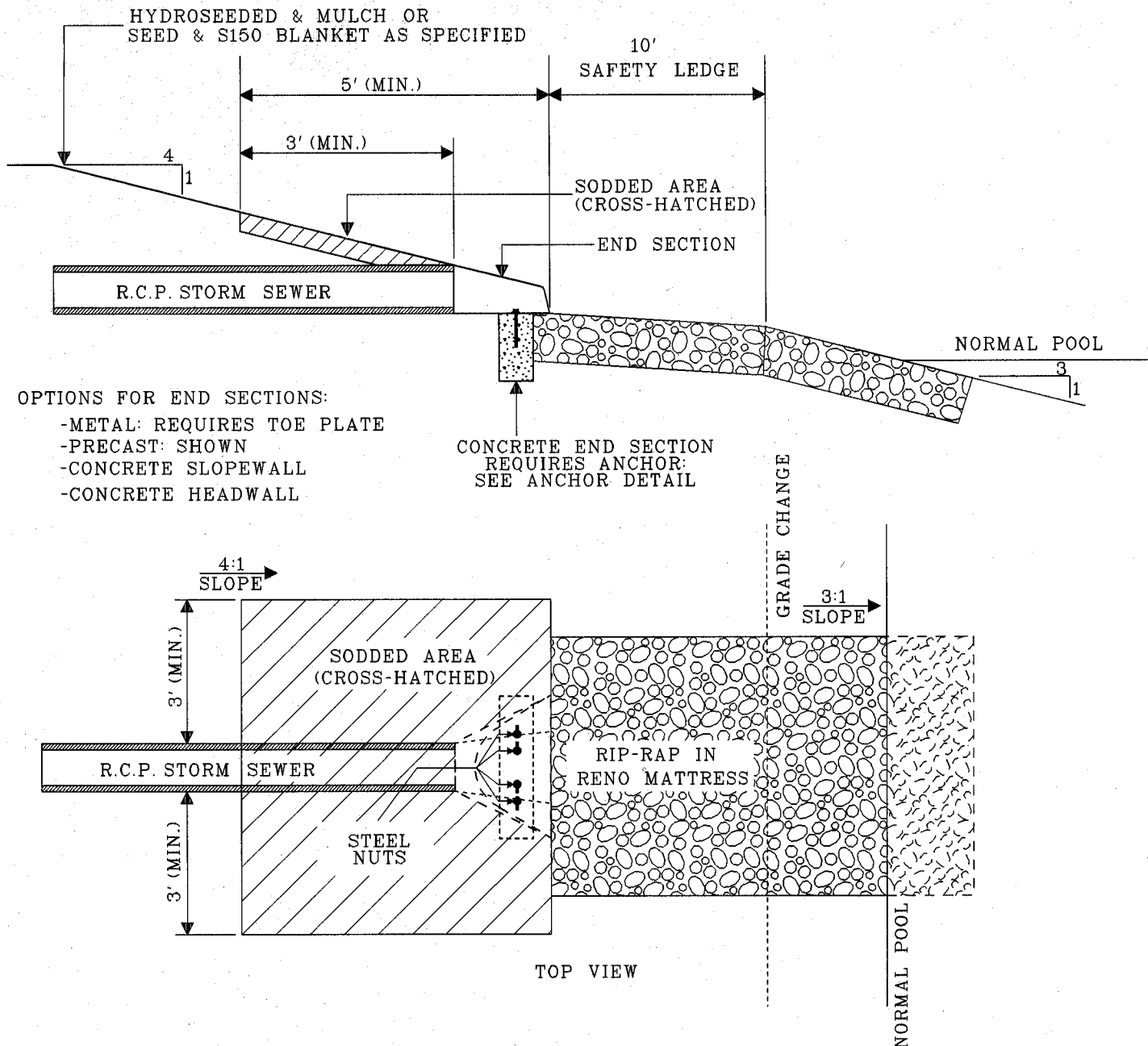
4 JAN 00
DATE

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STANDARD PLAN
D-8

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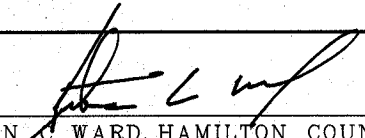
UNDERWATER DISCHARGE NOT ALLOWED



LAKE OUTLET DETAIL FOR LAKE CROSS-SECTION OPTION 1

(DRAWING NOT TO SCALE)

HAMILTON COUNTY SURVEYOR'S OFFICE

APPROVED: 
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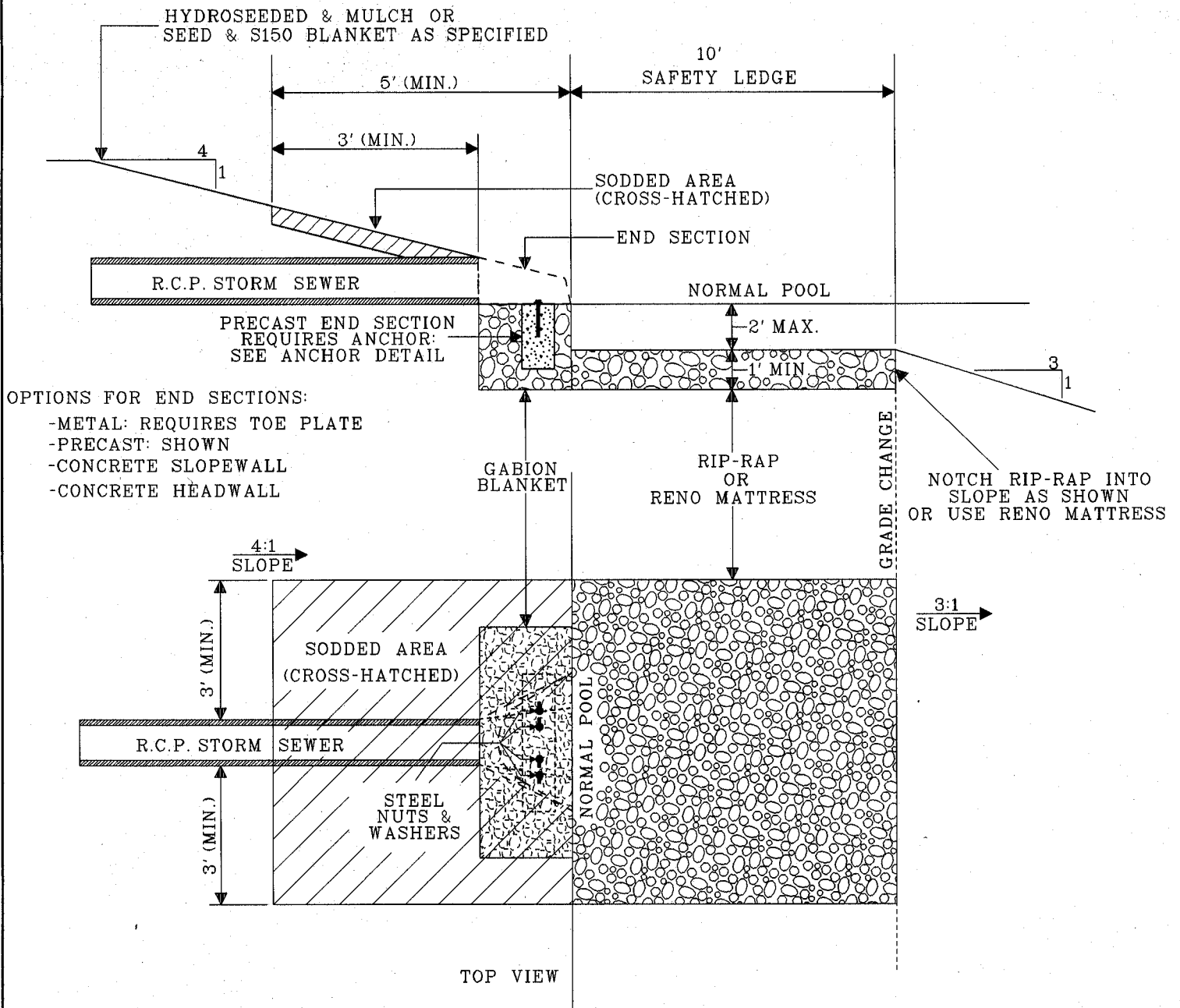
4/1/00
DATE

REVISED: 1 JAN 2000

STANDARD PLAN
D-9

OFFICE OF THE HAMILTON COUNTY SURVEYOR

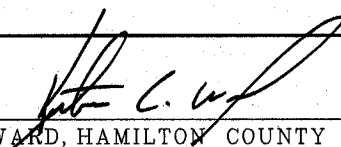
UNDERWATER DISCHARGE NOT ALLOWED



LAKE OUTLET DETAIL FOR LAKE CROSS-SECTION OPTION 2

(DRAWING NOT TO SCALE)

HAMILTON COUNTY SURVEYOR'S OFFICE

APPROVED: 
KENTON C. WARD, HAMILTON COUNTY SURVEYOR

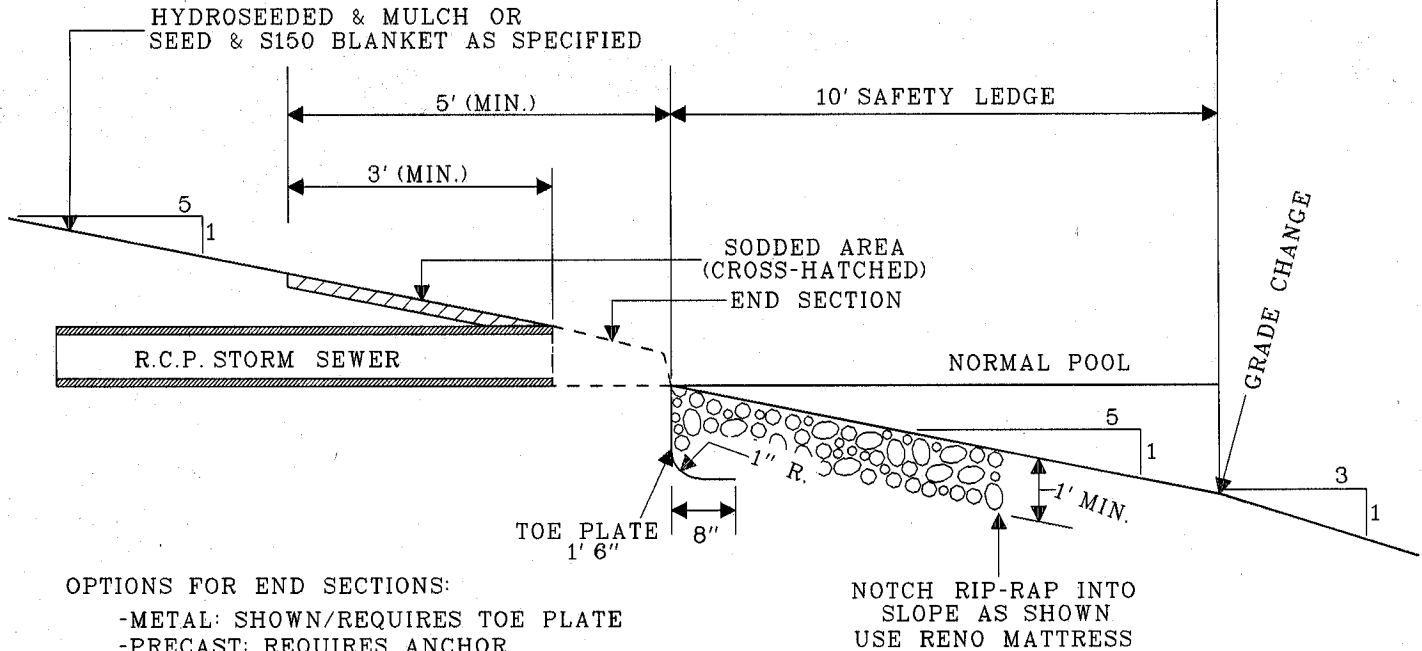
4 JAN 00
DATE

REVISED: 1 JAN 2000

STANDARD PLAN
D-10

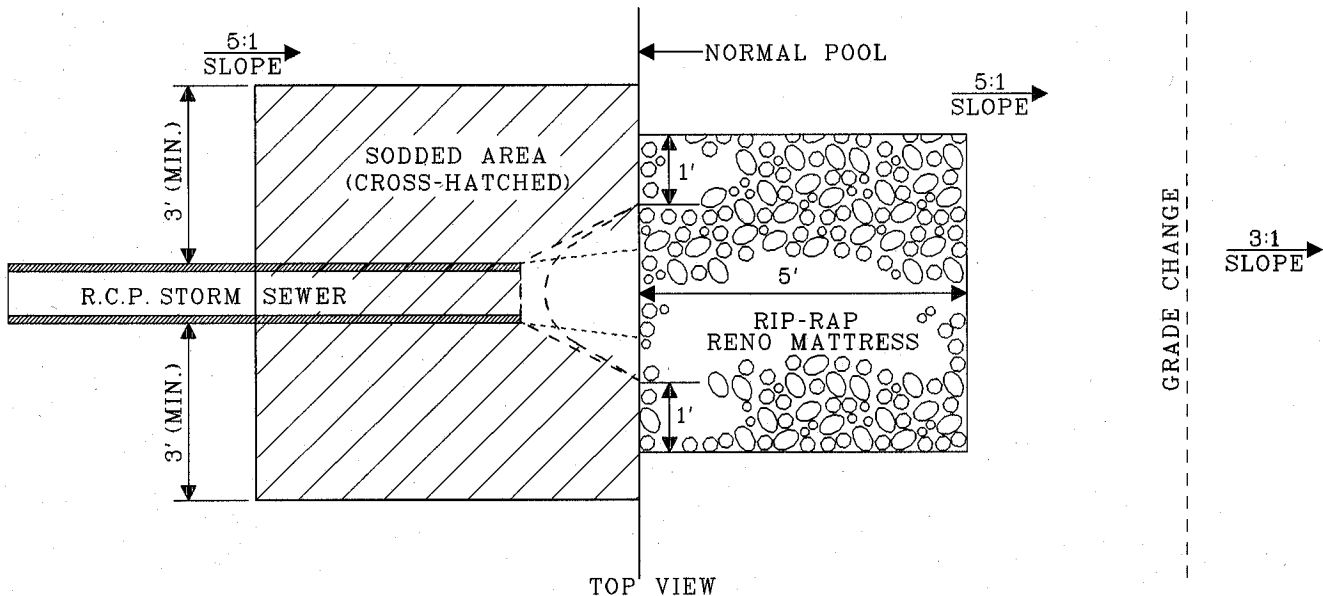
OFFICE OF THE HAMILTON COUNTY SURVEYOR

UNDERWATER DISCHARGE NOT ALLOWED



OPTIONS FOR END SECTIONS:

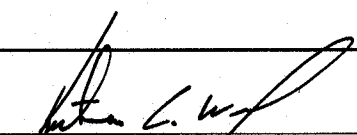
- METAL: SHOWN/REQUIRES TOE PLATE
- PRECAST: REQUIRES ANCHOR
- CONCRETE SLOPEWALL
- CONCRETE HEADWALL



LAKE OUTLET DETAIL FOR LAKE CROSS-SECTION OPTION 3

(DRAWING NOT TO SCALE)

HAMILTON COUNTY SURVEYOR'S OFFICE

APPROVED: 
KENTON C. WARD, HAMILTON COUNTY SURVEYOR

4 Jan 00
DATE

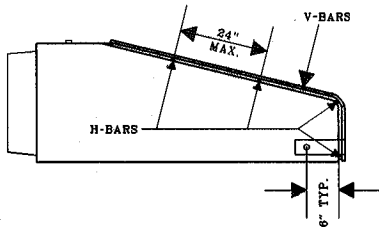
REVISED: 1 JAN 2000

STANDARD PLAN
D-11

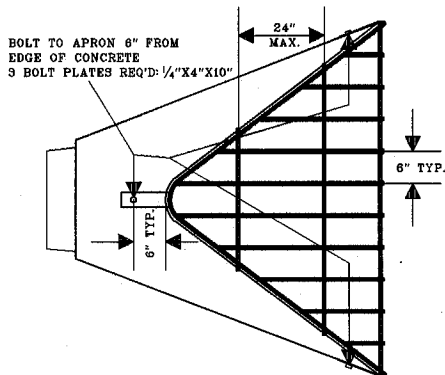
OFFICE OF THE HAMILTON COUNTY SURVEYOR

DEBRIS GUARD

SIDE PROFILE



TOP VIEW



Apron Size	V-bar Size	No. of H-bars	H-bar Size	Bolt Dia.	"A" Dim.
Inches	Inches	Req'd	Inches	Inches	Inches
18	1/2	3	5/8	1/2	5
24	5/8	4	3/4	1/2	7
30	5/8	4	3/4	1/2	7 1/2
36	3/4	4	1	1/2	10 1/2
42	3/4	4	1	3/4	11
48	3/4	4	1 1/2 pipe	3/4	12
54	3/4	4	1 1/2 pipe	3/4	12
60	3/4	5	1 1/2 pipe	3/4	14
72	3/4	5	1 1/2 pipe	3/4	14
84	3/4	6	1 1/2 pipe	3/4	15

12	1/2	3	5/8	1/2	4
15	1/2	3	5/8	1/2	4 1/2
18	1/2	4	5/8	1/2	4 1/2
21	1/2	4	5/8	1/2	5
24	5/8	4	3/4	1/2	5
27	5/8	4	3/4	1/2	5 1/2
30	5/8	4	3/4	1/2	5 1/2
36	3/4	4	1	3/4	8
42	3/4	4	1	3/4	8
48	3/4	5	1	3/4	8
54	3/4	5	1 1/2 pipe	3/4	8
60	3/4	5	1 1/2 pipe	3/4	8
66	3/4	6	1 1/2 pipe	3/4	8
72	3/4	6	1 1/2 pipe	3/4	9
84	3/4	7	1 1/2 pipe	3/4	10
90	3/4	7	1 1/2 pipe	3/4	14

NOTES:

1. BARS & PLATES ARE HOT-ROLLED STEEL.
2. BARS, PLATES, & PIPE ARE FINISHED WITH 2 COATS OF ALUMINUM PAINT.
3. BOLTS ARE GALVINIZED
4. NO REBAR THROUGH PIPES WILL BE ALLOWED
5. DEBRIS GUARD SHALL BE REMOVABLE

(DRAWING NOT TO SCALE)

HAMILTON COUNTY SURVEYOR'S OFFICE

APPROVED: _____

KENTON C. WARD, HAMILTON COUNTY SURVEYOR

4 Jan 2000
DATE

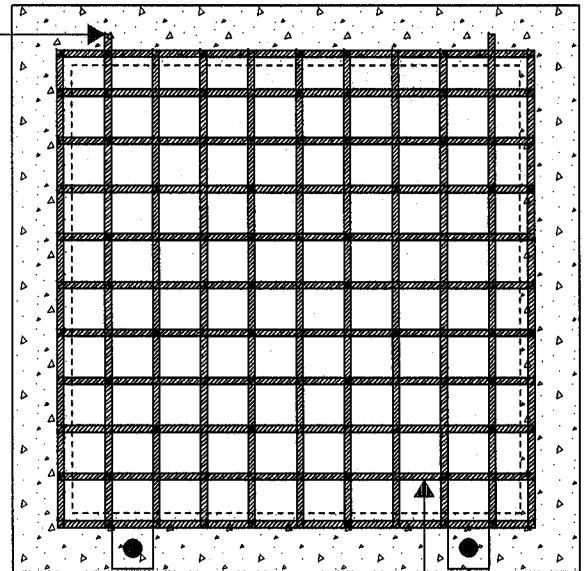
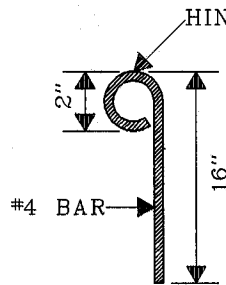
REVISED: 1 JAN 2000

STANDARD PLAN

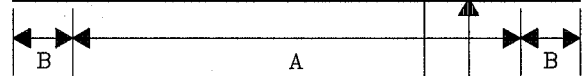
D-12

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PIPE SIZE	A	B
12"	3'	4'
15"	3'	4'
18"	3'	4'
36"	4'	6'



CONC. OPENING
PLAN VIEW

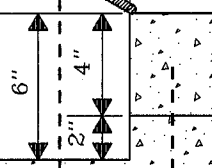


BOLT

#5 BARS @ 6" OR -EACH WAY

BAR GRATE
(WELDED $\frac{5}{8}$ " #5 BARS)

NORMAL POOL



#5 BARS @ 6" OR -BOTH WAYS

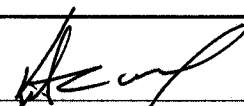
SECTION VIEW

POND OUTFALL STRUCTURE

(DRAWING NOT TO SCALE)

HAMILTON COUNTY SURVEYOR'S OFFICE

REVISED: 1 JAN 2000

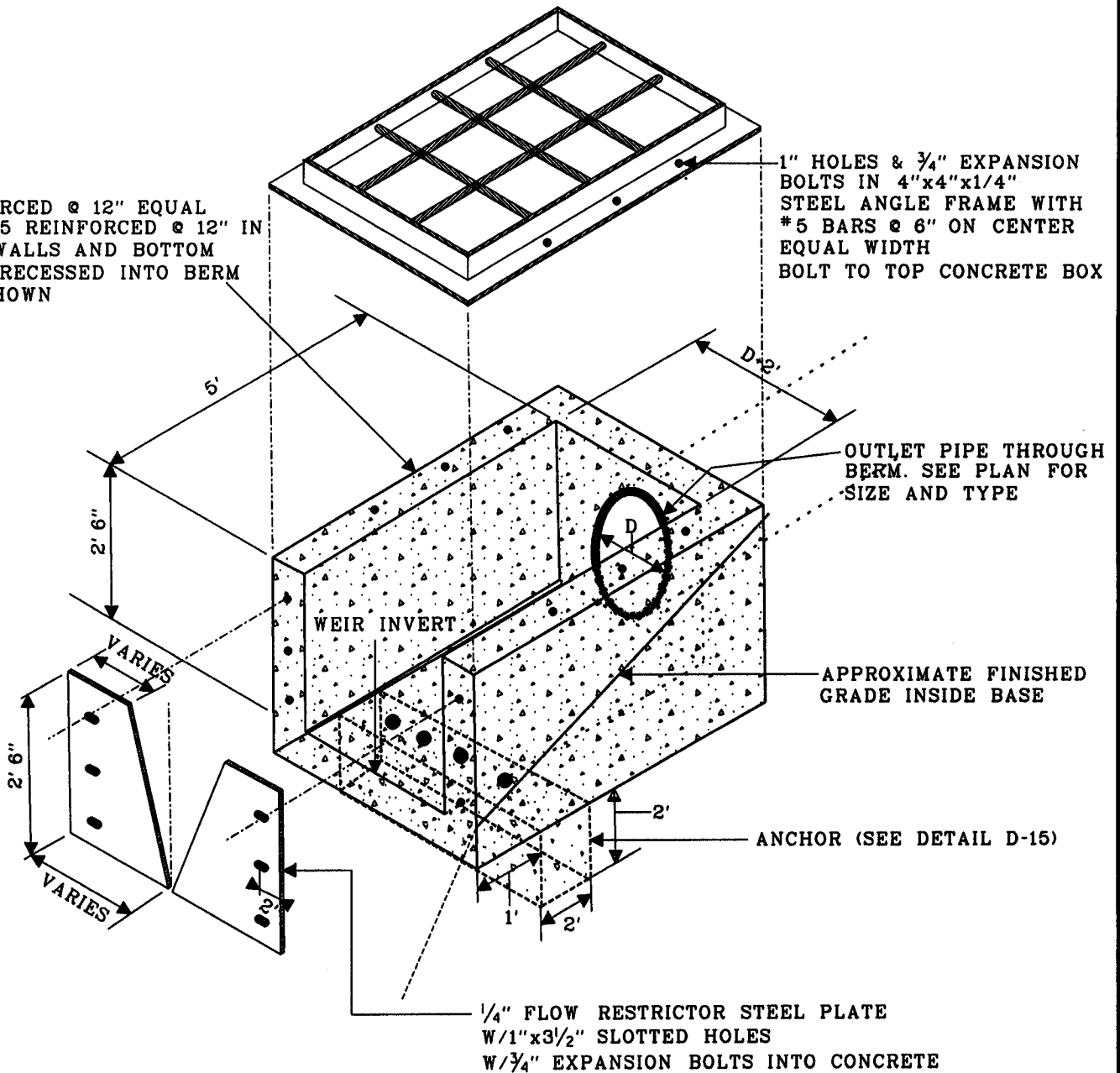
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4 JAN 00
DATE

STANDARD PLAN
D-13

OFFICE OF THE HAMILTON COUNTY SURVEYOR

5 REINFORCED @ 12" EQUAL
WIDTH IN 5 REINFORCED @ 12" IN
6" THICK WALLS AND BOTTOM
WEIR BOX RECESSED INTO BERM
SIDE AS SHOWN



ISOMETRIC @ WEIR OUTLET

(DRAWING NOT TO SCALE)

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2/1/02
DATE

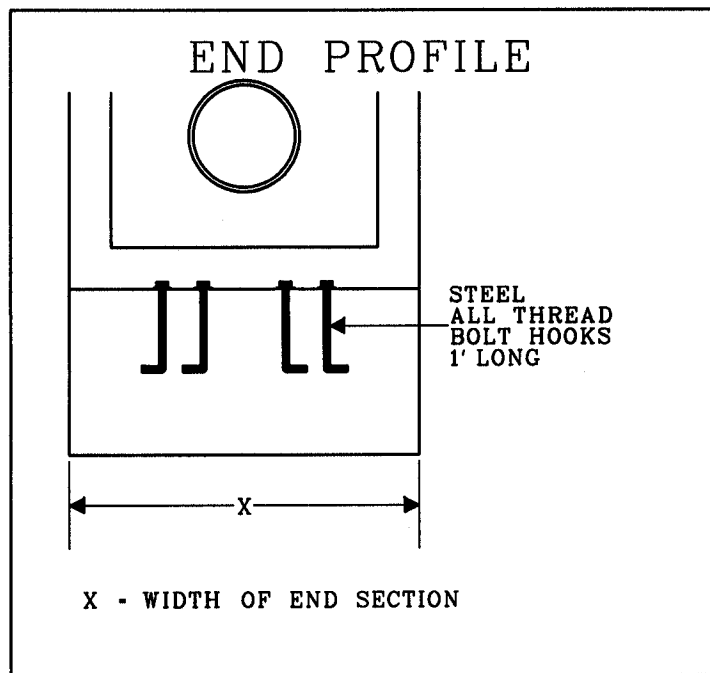
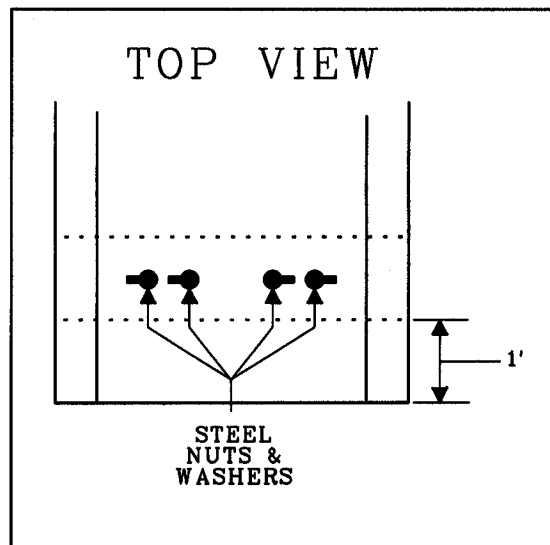
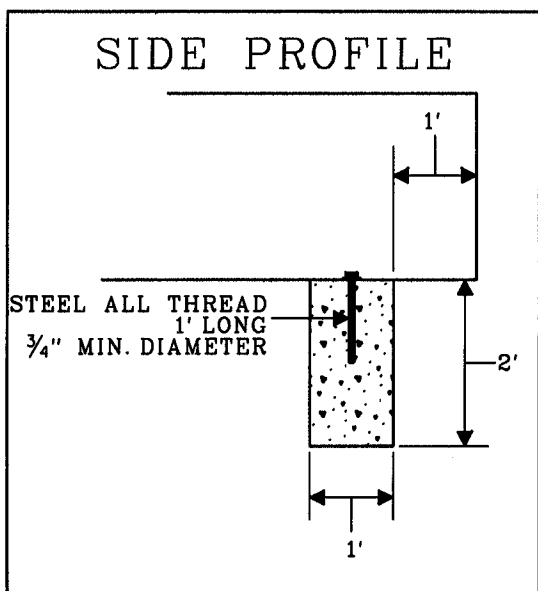
REVISED: 1 FEB 2002

STANDARD PLAN

D-14

ANCHOR

FOR WEIR OUTLET (STANDARD DRAWING D-14)



ALLTHREAD SPACING TO BE TWO PER FOOT
 EX: 12" END SECTION - 2 ALLTHREAD
 24" END SECTION - 4 ALLTHREAD

(DRAWING NOT TO SCALE)

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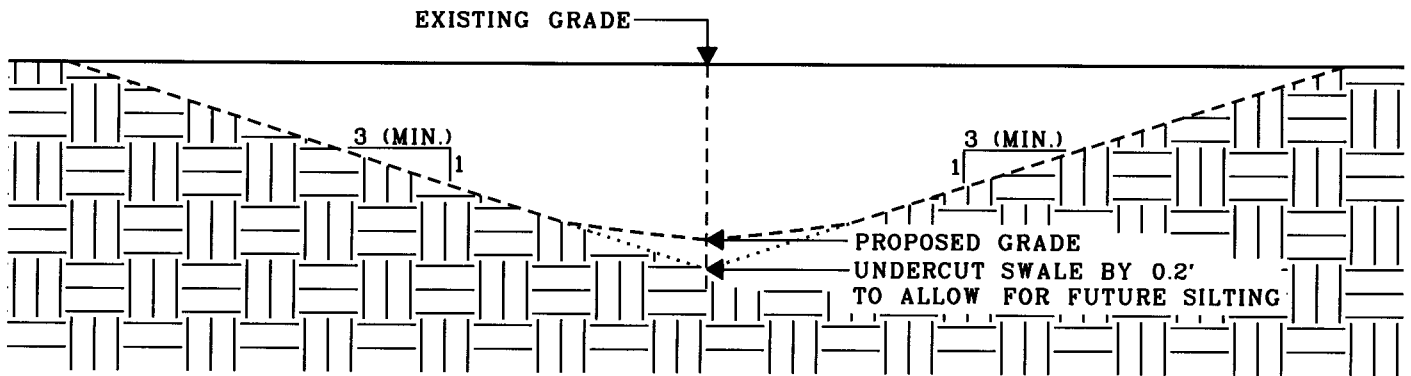
APPROVED: Kenton C. Ward
 KENTON C. WARD, HAMILTON COUNTY SURVEYOR

2/1/02
 DATE

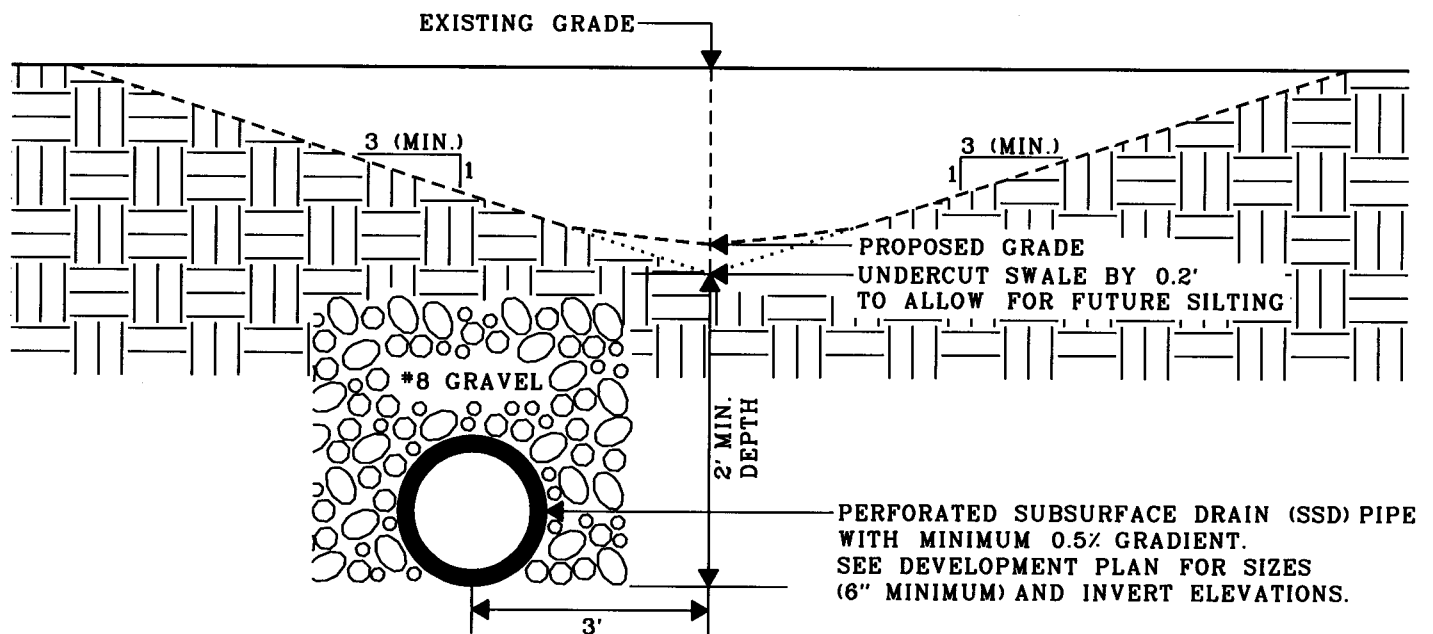
REVISED: 1 FEB 2002

STANDARD PLAN
 D-15

OFFICE OF THE HAMILTON COUNTY SURVEYOR



UNDERDRAINS REQUIRED IN SWALES WITH LESS THAN 1% SLOPE



NOTE:
TILE SHALL BE DOUBLE WALL-SMOOTH WALL
PERFORATED PLASTIC PIPE.

TYPICAL SWALE DETAIL

(DRAWING NOT TO SCALE)

HAMILTON COUNTY SURVEYOR'S OFFICE

REVISED: 16 AUG 2005

APPROVED:

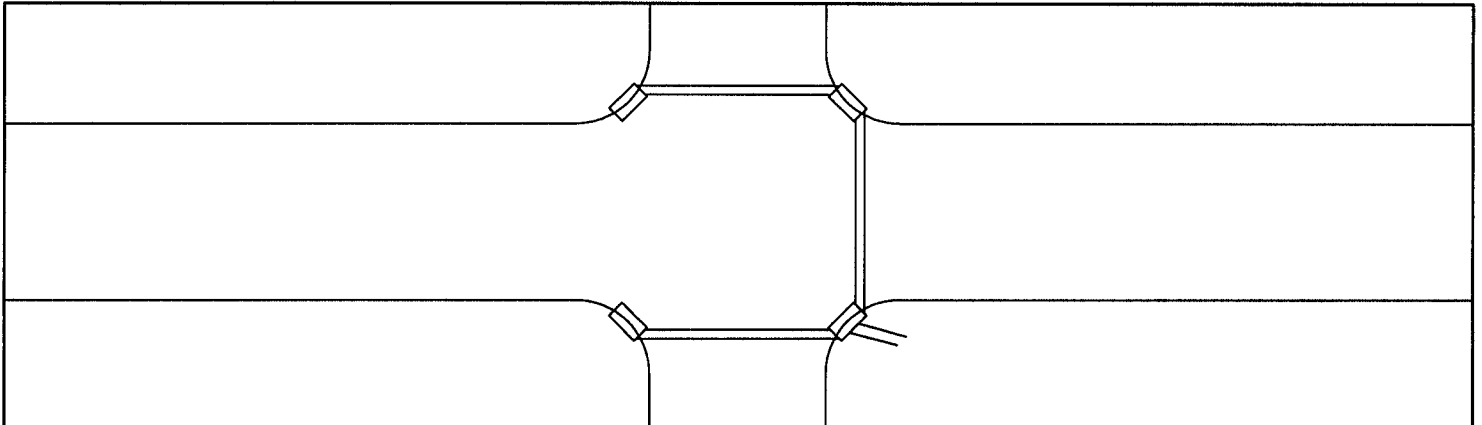
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8/16/05
DATE

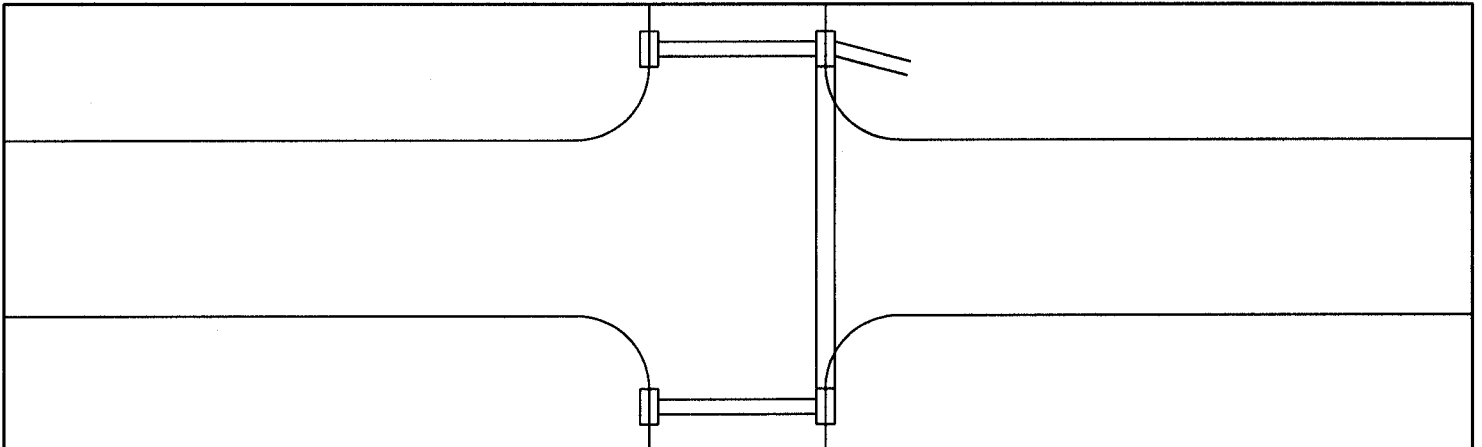
STANDARD PLAN
D-16

OFFICE OF THE HAMILTON COUNTY SURVEYOR

CURB INLET LOCATION
FLOWLINES REQUIRED



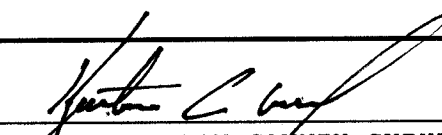
IF CURB FLOWLINE GRADE IS LESS THAN .75%



THIS ALTERNATIVE MAY BE USED IF CURB FLOWLINE GRADE IS GREATER THAN .75%

(DRAWING NOT TO SCALE)

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2/1/02
DATE

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STANDARD PLAN
D-17

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PIPE SIZE (INCHES)	STRUCTURES LESS THAN 48" FROM T/C TO INVERT (INCHES)	MAXIMUM NUMBER OF SIDES ³ OF THE BOX WITH PIPES	MINIMUM ANGLE BETWEEN PIPE ⁴ (NUMBER OF PIPES - ANGLE IN DEGREES)	STRUCTURES GREATER THAN 48" FROM T/C TO INVERT	CURB CASTING PER DETAIL CT-7 OR CT-8
12 TO 15	24 X 24 BOX	3	2 - 135 3 - 90	MANHOLE DETAIL D-20 OR NOTE 2	YES
15 TO 18	30 X 30 BOX	3	2 - 135 3 - 90	MANHOLE DETAIL D-20 OR NOTE 2	YES WITH BOX/MH LID
18 TO 24	24 X 36 ¹ OR 36 X 36 BOX	3	2 - 135 3 - 90	MANHOLE DETAIL D-20 OR NOTE 2	YES WITH BOX/MH LID
24 TO 66	NOT APPLICABLE	NOT APPLICABLE	NOT APPLICABLE	MANHOLE DETAIL D-21 OR NOTE 2	YES WITH BOX/MH LID
66 TO 144	NOT APPLICABLE	NOT APPLICABLE	NOT APPLICABLE	MANHOLE DETAIL D-22 OR NOTE 2	YES WITH BOX/MH LID

NOTES

1 - UP TO 15" PIPE CAN BE INSTALLED IN 24" SIDE, ALL OTHER PIPES SHALL BE INSTALLED IN LONG SIDE OF BOX.

2 - A BOX WITH STEPS WITH WRITTEN SPECIAL DESIGN APPROVAL FROM HCSO.

3 - A PIPE INSTALLED IN THE CORNER OF A BOX COUNTS AS USING 2 SIDES OF THE BOX.

4 - STRUCTURES SHALL BE DESIGNED FOR MAXIMUM FLOW THROUGH STRUCTURE.

SPECIAL NOTE: ALL STRUCTURES REQUIRE 0.1' OF DROP ACROSS THE STRUCTURE (LOWEST INLET INVERT TO OUTLET INVERT).

SPECIAL NOTE: ALL MANHOLES SHALL HAVE STEPS TO WITHIN A MAXIMUM OF 1 FOOT FROM BOTTOM OF STRUCTURE. INSPECTOR MAY REQUIRE STEPS TO BE INSTALLED OR MOVED AFTER STRUCTURE IS SET, TO IMPROVE ACCESS.

SPECIAL NOTE: IF CURB INLET STRUCTURE IS TO HAVE 2 FOOT SUMP, THEN THE STRUCTURE SHALL BE A MINIMUM OF A 48" MANHOLE OR A 3 FOOT BY 4 FOOT BOX.

SPECIAL NOTE: DOUBLE INLET BOX STRUCTURES SHALL PROVIDE SUPPORT FOR ALL 4 SIDES OF THE CASTING.

SPECIAL NOTE: ALL CASTINGS SHALL BE PER THE APPROVED CASTING DETAILS OR BY SPECIAL WRITTEN APPROVAL FROM HCSO.

SPECIAL NOTE: NO "DOGHOUSE" STRUCTURES ARE ALLOWED.

HAMILTON COUNTY SURVEYOR'S OFFICE

STORM STRUCTURE SIZING TABLE

REVISED: 18 DEC 2006

APPROVED: _____

KENTON C. WARD, HAMILTON COUNTY SURVEYOR

8 MAR 07
DATE

STANDARD PLAN

D-18

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STRUCTURE DATA TABLE

[illegible]
$$\text{DEPTH} = \text{T/C} - (\text{INV} + \text{DIA} + \text{THICKNESS})$$

NOTE: TABLE TO BE LOCATED ON DEVELOPMENT PLAN.

HAMILTON COUNTY SURVEYOR'S OFFICE

REVISSED: 1 FEB 2002

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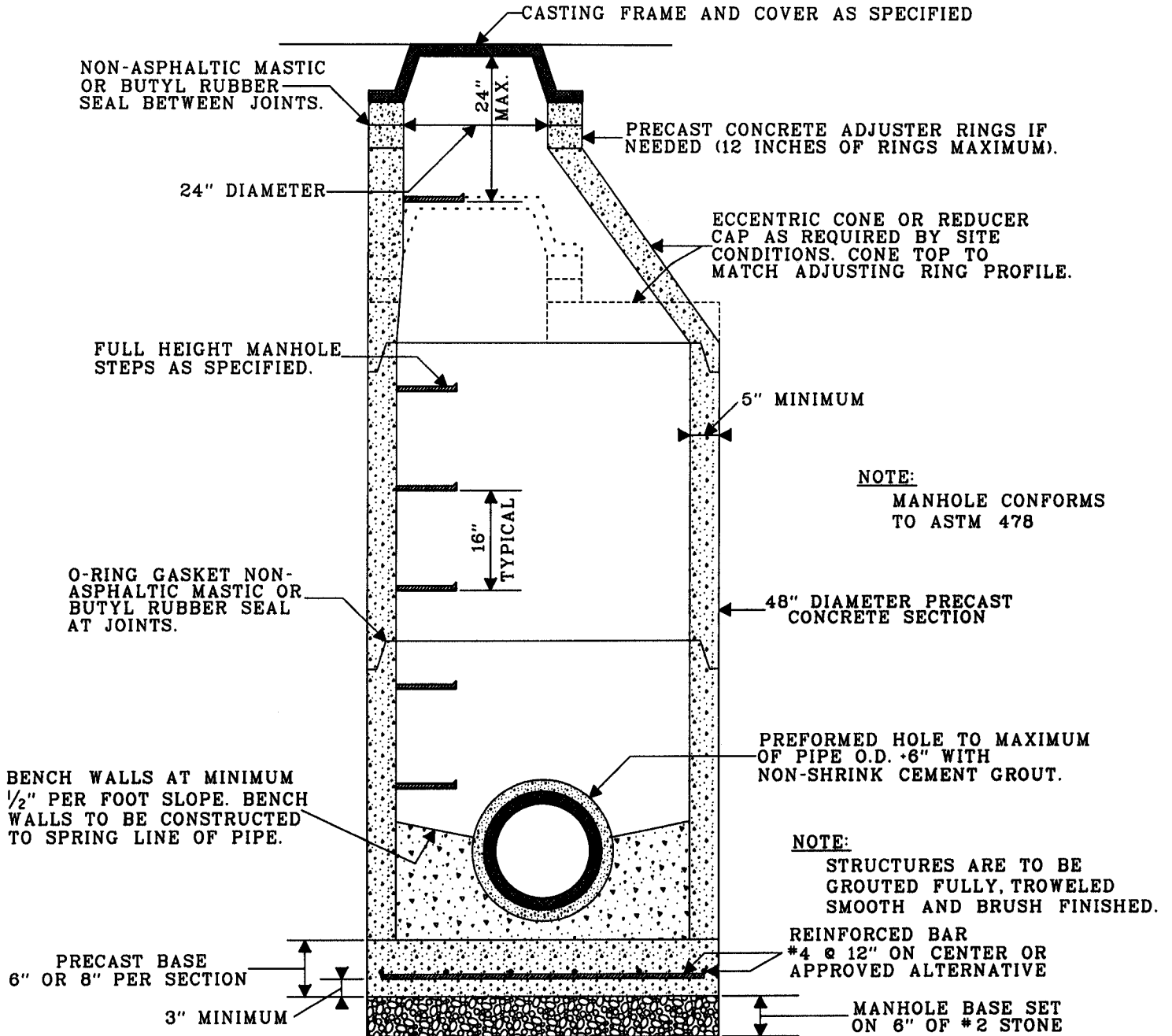
KENTON C. WARD, HAMILTON COUNTY SURVEYOR

2/1/02
DATE

STANDARD PLAN

D-19

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STANDARD MANHOLE FOR PIPE SIZES 12" THRU 24"

(DRAWING NOT TO SCALE)

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2/1/02
DATE

REVISED: 1 FEB 2002

STANDARD PLAN
D-20

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STANDARD MANHOLE FOR PIPE SIZES 24" THRU 66"

CASTING FRAME
AND COVER AS
SPECIFIED

NON-ASPHALTIC
MASTIC OR
BUTYL RUBBER
SEAL BETWEEN
JOINTS

5" MINIMUM

NON-ASPHALTIC MASTIC
OR BUTYL RUBBER
SEAL BETWEEN JOINTS

18" TYPICAL

DIA. "F"
1' MIN. OVER
HIGHEST PIPE

DIA. "G"

3" MIN.

3" MIN.

PRECAST CONCRETE ADJUSTER RINGS IF
NEEDED (12 INCHES OF RINGS MAXIMUM).

STANDARD PRECAST MANHOLE CAP OR CONE

5" MINIMUM

FULL HEIGHT MANHOLE
STEPS AS SPECIFIED

CONCRETE REDUCER CAP

MANHOLE DIA. "F"	PIPE DIA. "G"	PIPE TURNS
96"	48"	GREATER THAN 45 TO 90 DEG
96"	54"-66"	UP TO 60 DEG
84"	42"	GREATER THAN 45 TO 90 DEG
84"	48"	TURNS UP TO 45 DEG
72"	42"-48"	UP TO 45 DEG
60"	33"-36"	STRAIGHT THRU
60"	24"-33"	GREATER THAN 45 TO 90 DEG

NOTE:

- MANHOLE CONFORMS TO ASTM C-478
- NO BRICK OR BLOCK WILL BE ALLOWED IN MANHOLE
- O-RING GASKET, NON-ASPHALTIC MASTIC OR BUTYL RUBBER SEAL BETWEEN JOINTS

PREFORMED HOLE TO MAXIMUM
OF PIPE O.D. +6" WITH
NON-SHRINK CEMENT GROUT

BENCH WALLS AT MINIMUM
1/2" PER FOOT SLOPE. BENCH
WALLS TO BE CONSTRUCTED
TO SPRING LINE OF PIPE.

8" MIN.

(DRAWING NOT TO SCALE)

ONE COMPLETE UNIT OF PRECAST CONCRETE
MANHOLE BASE AND RISER OR APPROVED ALTERNATIVE

HAMILTON COUNTY SURVEYOR'S OFFICE

REVISED: 1 FEB 2002

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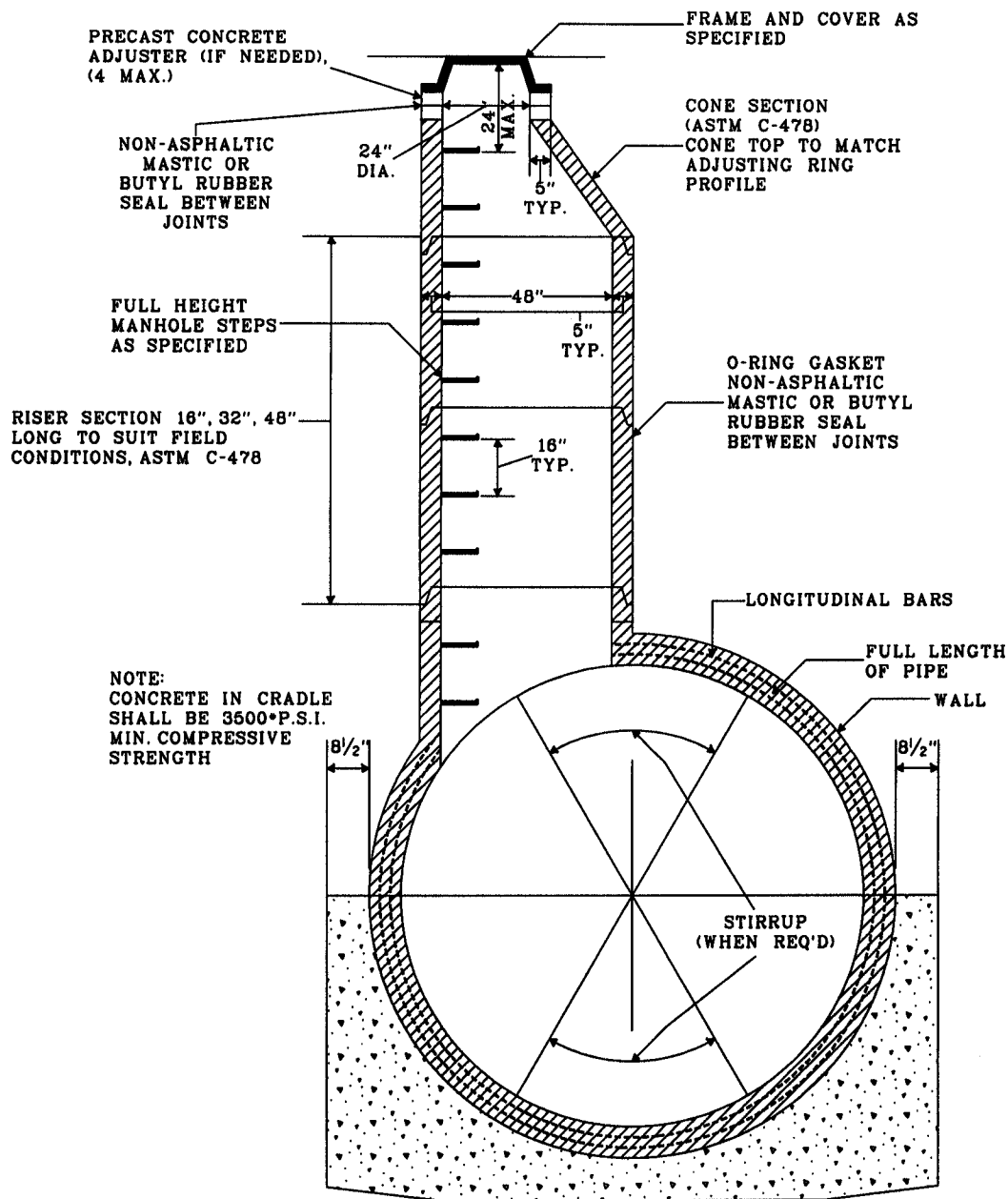
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2/1/02
DATE

STANDARD PLAN
D-21

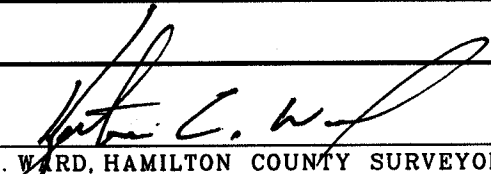
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STANDARD MANHOLE FOR PIPE SIZES 66" THRU 144"



(DRAWING NOT TO SCALE)

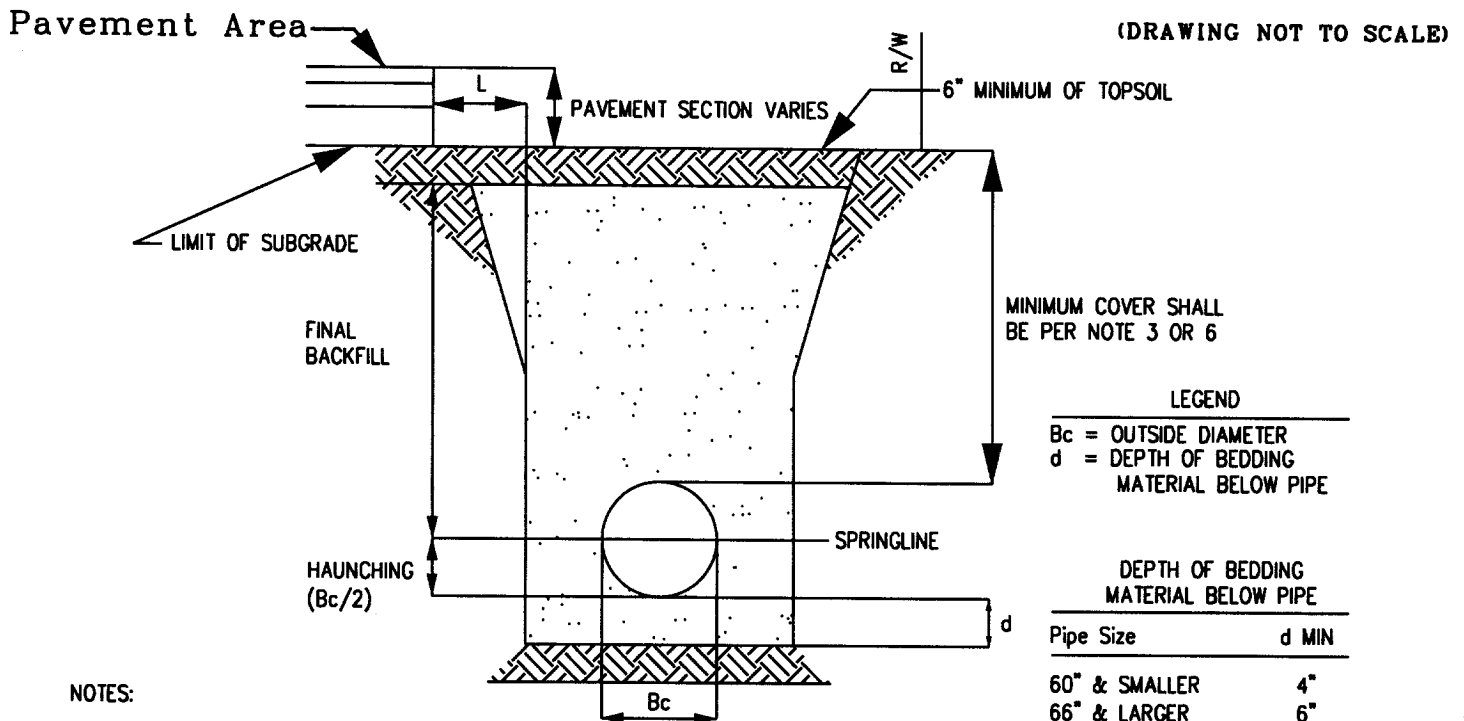
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APPROVED:  2/1/02
KENTON C. WARD, HAMILTON COUNTY SURVEYOR DATE

REVISED: 1 FEB 2002

STANDARD PLAN
D-22

OFFICE OF THE HAMILTON COUNTY SURVEYOR



NOTES:

- BEDDING AND HAUNCHING FOR ALL RCP INSTALLATIONS SHALL BE #8 STONE MEETING THE MATERIAL REQUIREMENTS OF THE INDOT. BEDDING SHALL BE PLACED IN THE TRENCH BOTTOM SUCH THAT AFTER THE PIPE IS INSTALLED TO GRADE AND LINE, THERE REMAINS A 4" MINIMUM DEPTH OF MATERIAL BELOW THE PIPE BARREL AND A MINIMUM OF 3" BELOW THE BELL. FOR PIPE SIZES 66" AND LARGER, THE MINIMUM DEPTH OF MATERIAL BELOW THE PIPE BARREL SHALL BE 6". BEDDING SHALL BE PLACED TO BE UNIFORM AS POSSIBLE, BUT SHALL BE LOOSELY PLACED UNCOMPACTED MATERIAL UNDER THE MIDDLE THIRD OF THE PIPE PRIOR TO PLACEMENT OF THE PIPE. IF THE UNDERLYING SOILS OF THE TRENCH BOTTOM ARE SOFT OR YEILDING, THE SOIL SHALL BE UNDERCUT TO SUCH A DEPTH THAT WHEN REPAIRED WITH #2 STONE IT WILL PRODUCE A UNIFORM AND STABLE FOUNDATION ALONG THE ENTIRE LENGTH OF THE PIPE. HAUNCHING AND INTAIL BACKFILL SHALL BE COMPACTED IN 8" MAXIMUM LIFTS TO NOT LESS THAN 90% STANDARD PROCTOR DENSITY FOR THE ENTIRE DEPTH OF THE MATERIAL PLACED. THE BACKFILL SHALL BE BROUGHT UP EVENLY ON BOTH SIDES OF THE PIPE FOR THE FULL LENGTH OF THE PIPE. HAUNCHING SHALL EXTEND TO THE SPRINGLINE OF THE PIPE. MINIMUM TRENCH WIDTH SHALL BE THE OUTSIDE DIAMETER OF THE PIPE PLUS 18".
- FINAL BACKFILL FOR ALL RCP INSTALLATIONS WHERE "L" IS 5' OR LESS SHALL BE B-BORROW FOR STRUCTURE BACKFILL MEETING THE MATERIAL REQUIREMENTS OF THE INDOT AND SHALL BE COMPACTED IN 6" MAXIMUM LIFTS TO NOT LESS THAN 95% STANDARD PROCTOR DENSITY FOR THE ENTIRE DEPTH OF THE MATERIAL PLACED. THE BACKFILL FOR THE TOP 6" OF THE EXCAVATION BELOW THE START OF THE AGGREGATE SUBBASE OF THE PAVEMENT SHALL BE #53 STONE MEETING THE MATERIAL REQUIREMENT OF THE INDOT AND SHALL BE COMPACTED TO NOT LESS THAN 95% STANDARD PROCTOR DENSITY. FINAL BACKFILL FOR ALL RCP INSTALLATIONS WHERE "L" IS GREATER THAN 5' SHALL BE CLEAN FILL MATERIAL FREE OF ROCKS LARGER THAN 6" IN DIAMETER, FROZEN LUMPS OF SOIL, WOOD, OR OTHER EXTRANEIOUS MATERIAL, COMPACTED IN 12" MAXIMUM LIFTS TO NOT LESS THAT 90% STANDARD PROCTOR DENSITY FOR THE ENTIRE DEPTH OF THE EXCAVATION. THE FINAL 6 INCHES OF THE EXCAVATION SHALL CONSIST OF TOPSOIL.
- THE MINIMUM COVER FROM THE TOP OF THE INSTALLED PAVEMENT TO THE TOP OF THE INSTALLED PIPE SHALL BE THE PAVEMENT SECTION THICKNESS (ALL BITUMINOUS AND AGGREGATE MATERIAL ABOVE THE SUBGRADE) PLUS 1'-0", BUT UNDER NO CIRCUMSTANCES SHALL THE COVER ALONG ANY PART OF THE PIPE FROM THE FINAL PAVEMENT ELEVATION TO THE TOP OF THE PIPE BE LESS THAT 2.5 FEET.
- IF EXISTING SUBGRADE HAS BEEN LIME STABILIZED, BACKFILL WITH B-BORROW UP TO BOTTOM OF UNTREATED EXISTING SUBGRADE AND FILL TO TOP OF TREATED SUBGRADE WITH LIME STABALIZED SOIL
- THESE STANDARDS SHALL APPLY FOR ALL REGULATED DRAIN STORM SEWERS UNLESS THE ENTITY HAVING CONTROL OVER THE RIGHT OF WAY HAS A MORE STRINGENT STANDARD, IN WHICH CASE THE HIGHER STANDARD SHALL APPLY.
- THE MINIMUM COVER FROM THE FINAL GRADE TO THE TOP OF THE PIPE SHALL BE NOT LESS THAN 2 FEET OUTSIDE OF PAVEMENT AREAS.

HAMILTON COUNTY SURVEYOR'S OFFICE

RCP Bedding and Backfill Standard

REVISED: 18 DEC 2006

APPROVED: _____

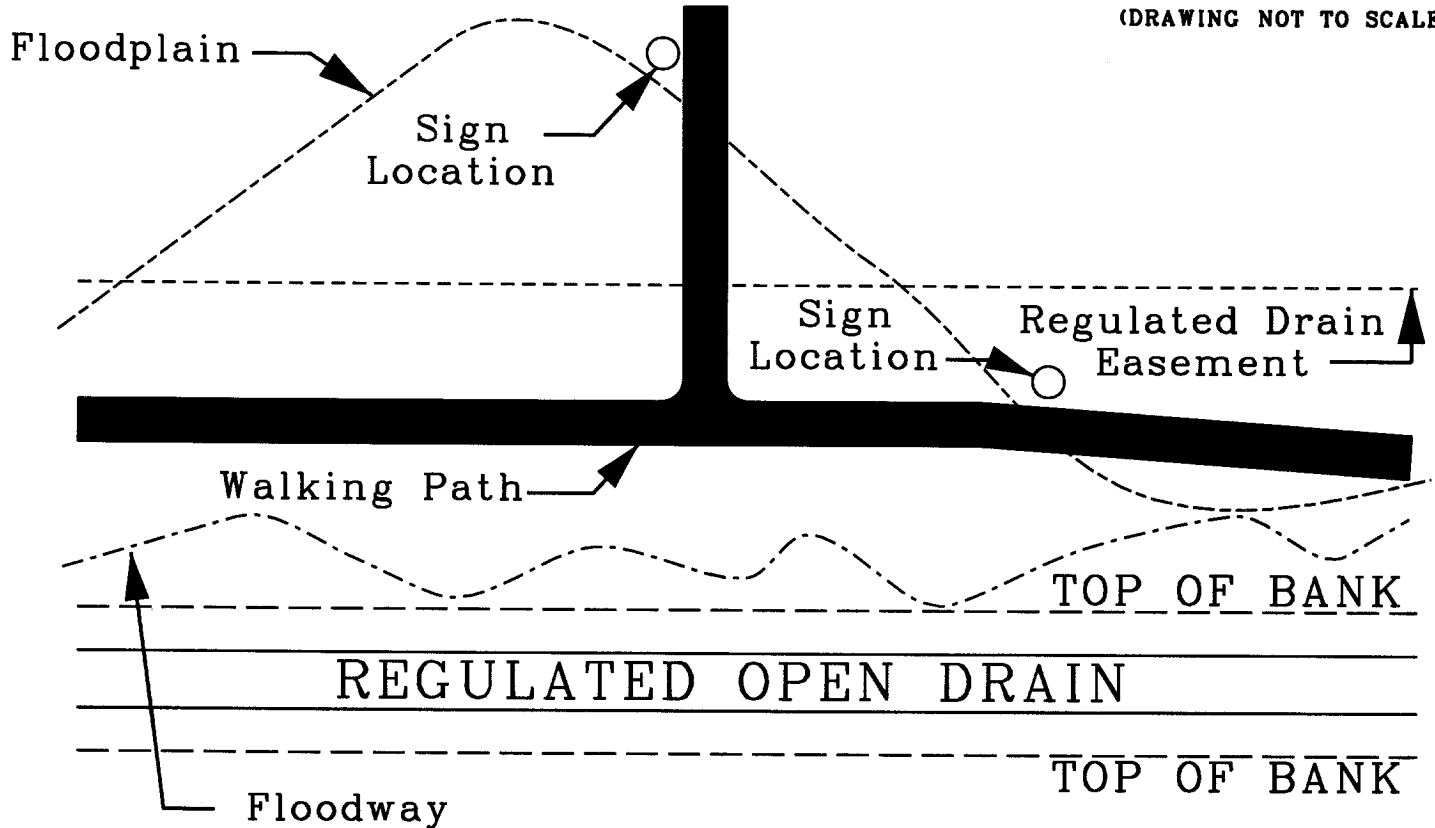
KENTON C. WARD, HAMILTON COUNTY SURVEYOR

BMAR07
DATE

STANDARD PLAN
D-23

OFFICE OF THE HAMILTON COUNTY SURVEYOR

(DRAWING NOT TO SCALE)



WHEN PEDESTRIAN WALKING PATHS ARE PLACED WITHIN REGULATED DRAIN EASEMENTS FOR OPEN DRAINS AND WITHIN FLOODPLAINS, SIGNS SHALL BE PLACED WARNING THE USERS OF POTENTIAL FLOODING. THE SIGNS:

- 1.) SHALL READ "WARNING - PATH SUBJECT TO FLOODING" AND BE VISIBLE AND READABLE FROM THE WALKING PATH.
- 2.) CAN BE DECORATIVE BUT SHALL BE APPROVED BY HCSO AND JURISDICTIONAL ENTITY PRIOR TO INSTALLATION.
- 3.) SHALL BE POSTED AT ALL LOCATIONS THE PATH ENTERS THE FLOODPLAIN FROM EITHER DIRECTION AND 500 FOOT INTERVALS IN EITHER DIRECTION WITHIN THE FLOODPLAIN.
- 4.) SHALL BE INSTALLED AND MAINTAINED BY THE PROPERTY OWNER OF THE PARCEL THE WALKING PATH IS LOCATED WITHIN.
- 5.) AN APPROVED NON-ENFORCEMENT AGREEMENT IS REQUIRED BEFORE THE WALKING PATH AND SIGNS CAN BE PLACED WITHIN THE REGULATED DRAIN EASEMENT.

HAMILTON COUNTY SURVEYOR'S OFFICE

FLOODPLAIN WARNING SIGN

REVISED: 18 DEC 2008

APPROVED: _____

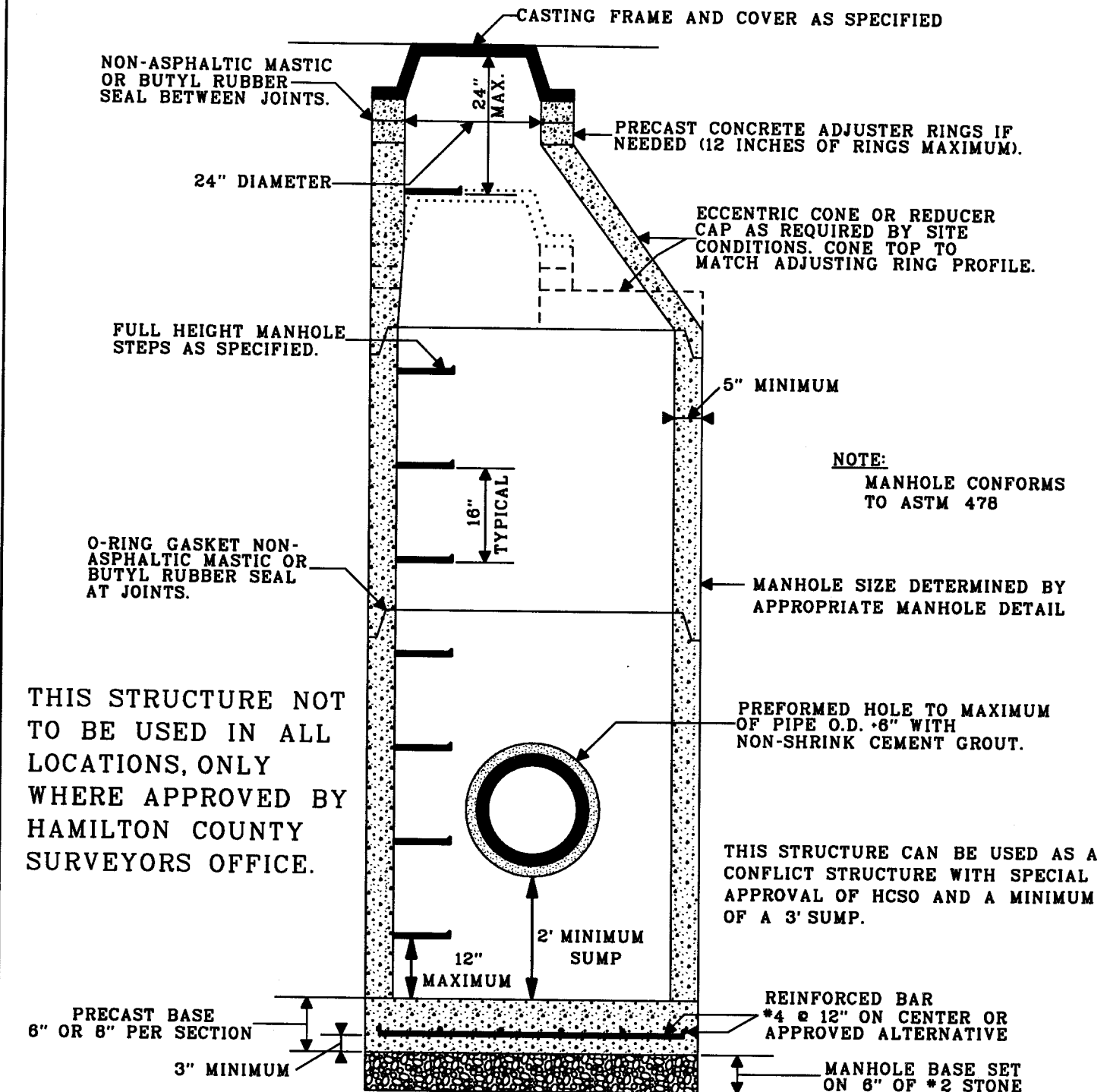
KENTON C. WARD, HAMILTON COUNTY SURVEYOR

8 MAR 07
DATE

STANDARD PLAN

D-24

OFFICE OF THE HAMILTON COUNTY SURVEYOR



(DRAWING NOT TO SCALE)

HAMILTON COUNTY SURVEYOR'S OFFICE SUMP MANHOLE STRUCTURE

REVISED: 18 DEC 2006

APPROVED: _____

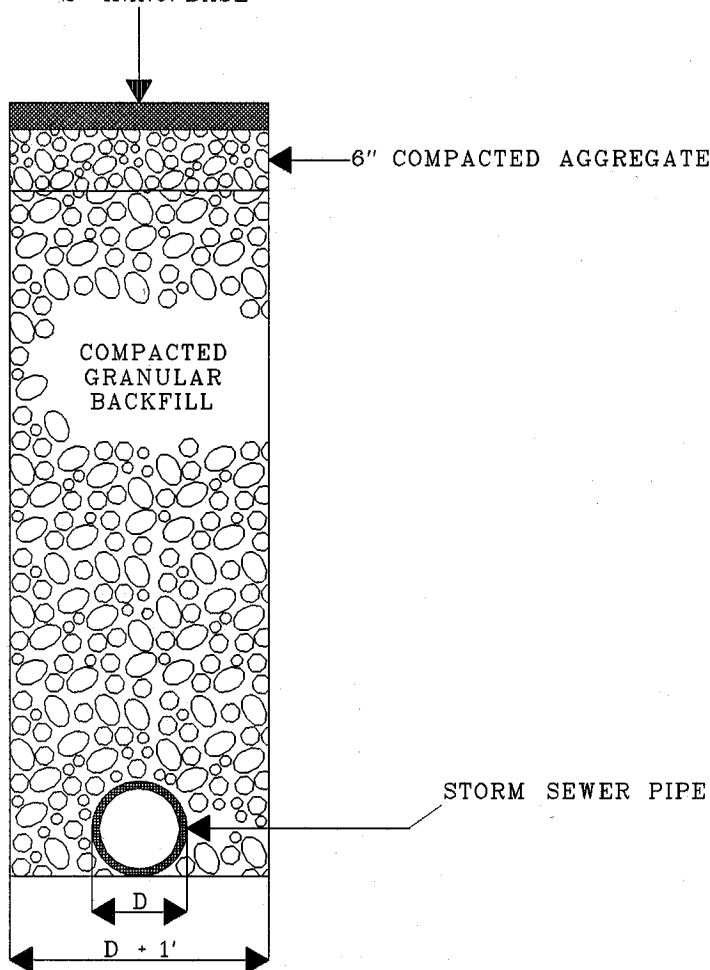
KENTON C. WARD, HAMILTON COUNTY SURVEYOR

8MAR07
DATE

STANDARD PLAN
D-25

OFFICE OF THE HAMILTON COUNTY SURVEYOR

1" HOT ASPHALTIC CONCRETE (H.A.C.) SURFACE ON
2" H.A.C. BASE



1. NEW SURFACE IS TO BE SLOPED AT THE SAME RATE AS THE EXISTING SURFACE.
 2. EXISTING PAVEMENT IS TO BE SAW CUT FOR A CLEAN BREAK.
 3. COMPACTED AGGREGATE IS TO BE LAID AT 6" LIFTS AND IS TO BE COMPACTED TO A MINIMUM OF 95%.
 4. TRENCH SPOIL IS TO BE REMOVED FROM THE WORK SITE.
 5. 1.5" H.A.C. #11 SURFACE.
 6. BITUMINOUS TACK APPLIED.
- AS PER INDIANA DEPT. OF HIGHWAYS
STANDARD SPECIFICATIONS - 1993
SECTIONS 409 & 902.

ASPHALT DRIVE REPAIR

(DRAWING NOT TO SCALE)

HAMILTON COUNTY SURVEYOR'S OFFICE

APPROVED:

KENTON C. WARD, HAMILTON COUNTY SURVEYOR

4 JAN 2000
DATE

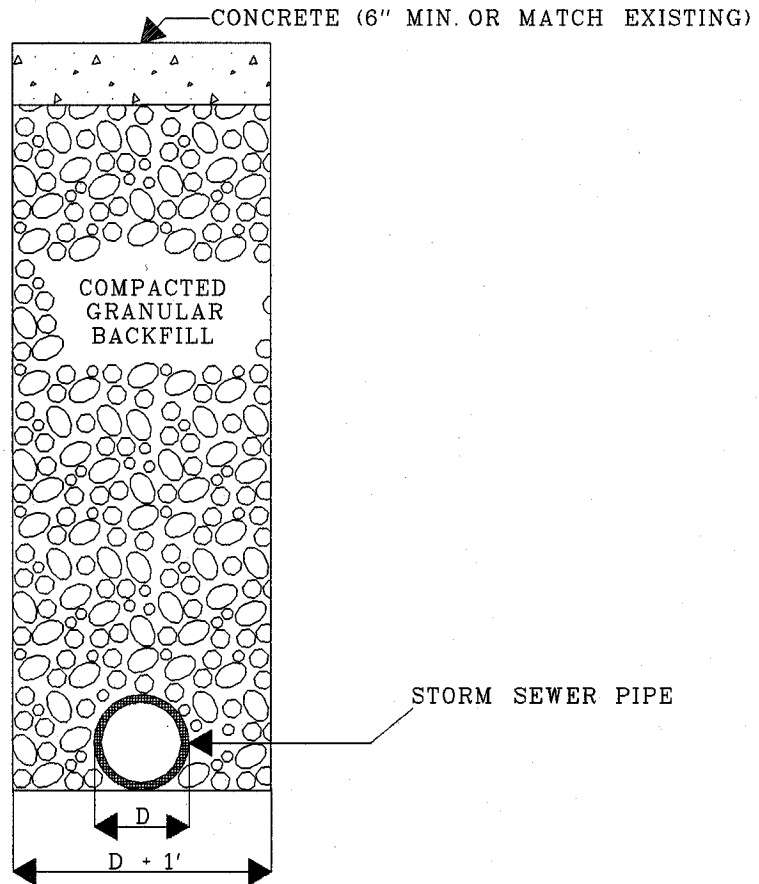
REVISED: 1 JAN 2000

STANDARD PLAN

M-1

OFFICE OF THE HAMILTON COUNTY SURVEYOR

1. NEW SURFACE IS TO BE SLOPED AT THE SAME RATE AS THE EXISTING SURFACE.
2. EXISTING PAVEMENT IS TO BE SAW CUT FOR A CLEAN BREAK.
3. COMPACTED AGGREGATE IS TO BE LAID AT 6" LIFTS AND IS TO BE COMPACTED TO A MINIMUM OF 95%.
4. TRENCH SPOIL IS TO BE REMOVED FROM THE WORK SITE.



CONCRETE DRIVE REPAIR

(DRAWING NOT TO SCALE)

HAMILTON COUNTY SURVEYOR'S OFFICE

APPROVED: _____

KENTON C. WARD, HAMILTON COUNTY SURVEYOR

4 JAN 00
DATE

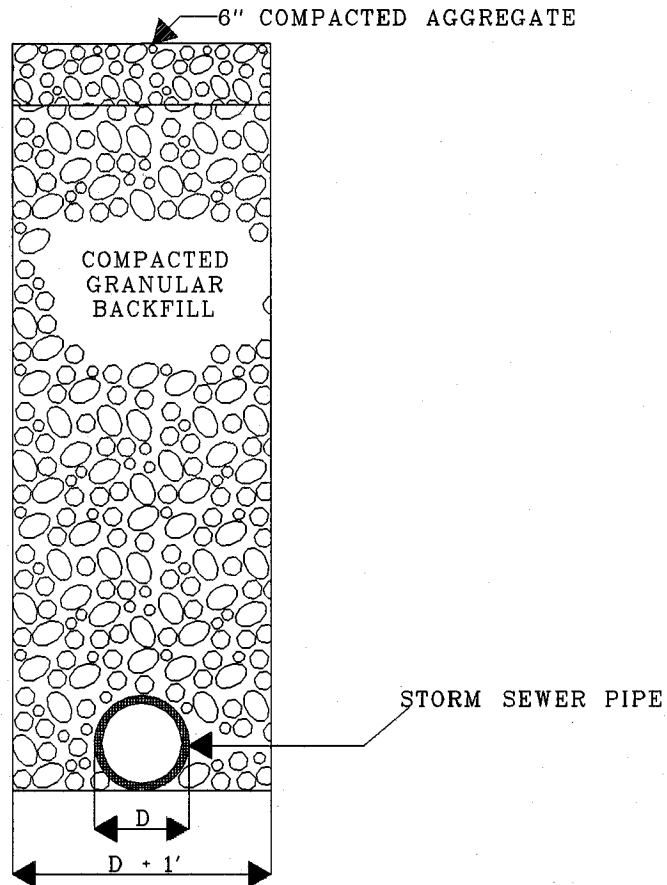
REVISED: 1 JAN 2000

STANDARD PLAN

M-2

OFFICE OF THE HAMILTON COUNTY SURVEYOR

1. NEW SURFACE IS TO BE SLOPED AT THE SAME RATE AS THE EXISTING SURFACE.
2. COMPACTED AGGREGATE IS TO BE LAID AT 6" LIFTS AND IS TO BE COMPACTED TO A MINIMUM OF 95%.
3. TRENCH SPOIL IS TO BE REMOVED FROM THE WORK SITE.



STONE DRIVE REPAIR

(DRAWING NOT TO SCALE)

HAMILTON COUNTY SURVEYOR'S OFFICE

APPROVED: _____

KENTON C. WARD, HAMILTON COUNTY SURVEYOR

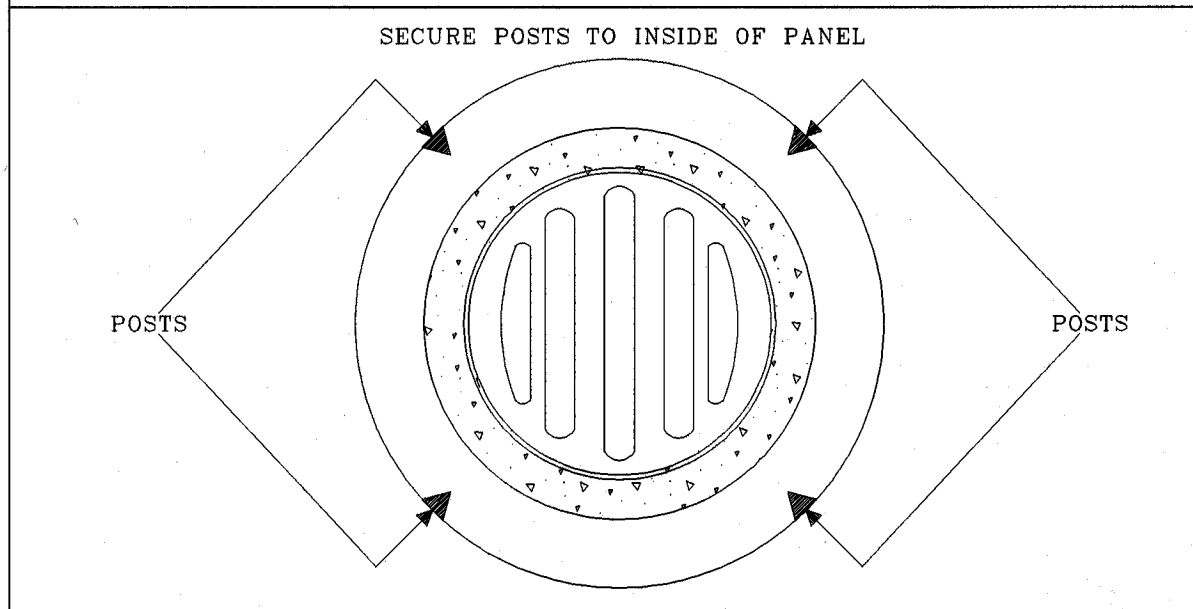
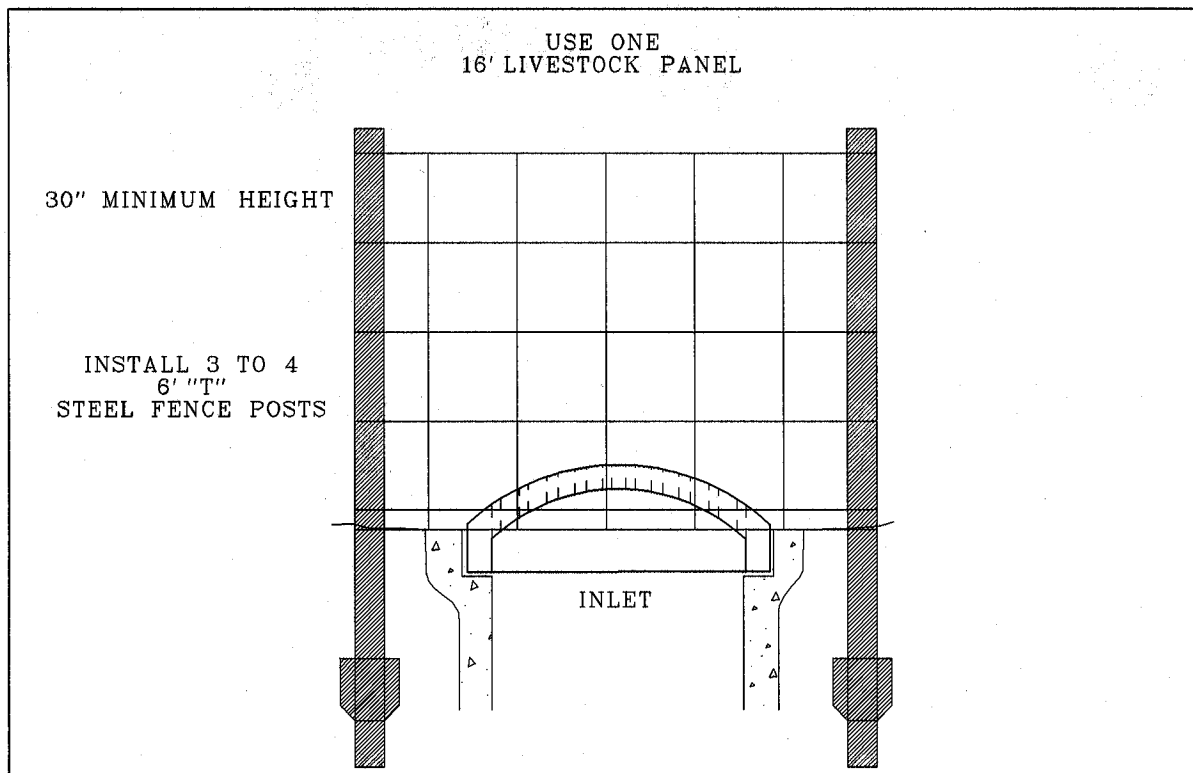
4 JAN 00
DATE

REVISED: 1 JAN 2000

STANDARD PLAN

M-3

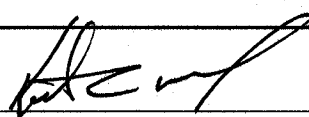
OFFICE OF THE HAMILTON COUNTY SURVEYOR



INLET TRASH/DEBRIS GUARD

(DRAWING NOT TO SCALE)

HAMILTON COUNTY SURVEYOR'S OFFICE

APPROVED: 
KENTON C. WARD, HAMILTON COUNTY SURVEYOR

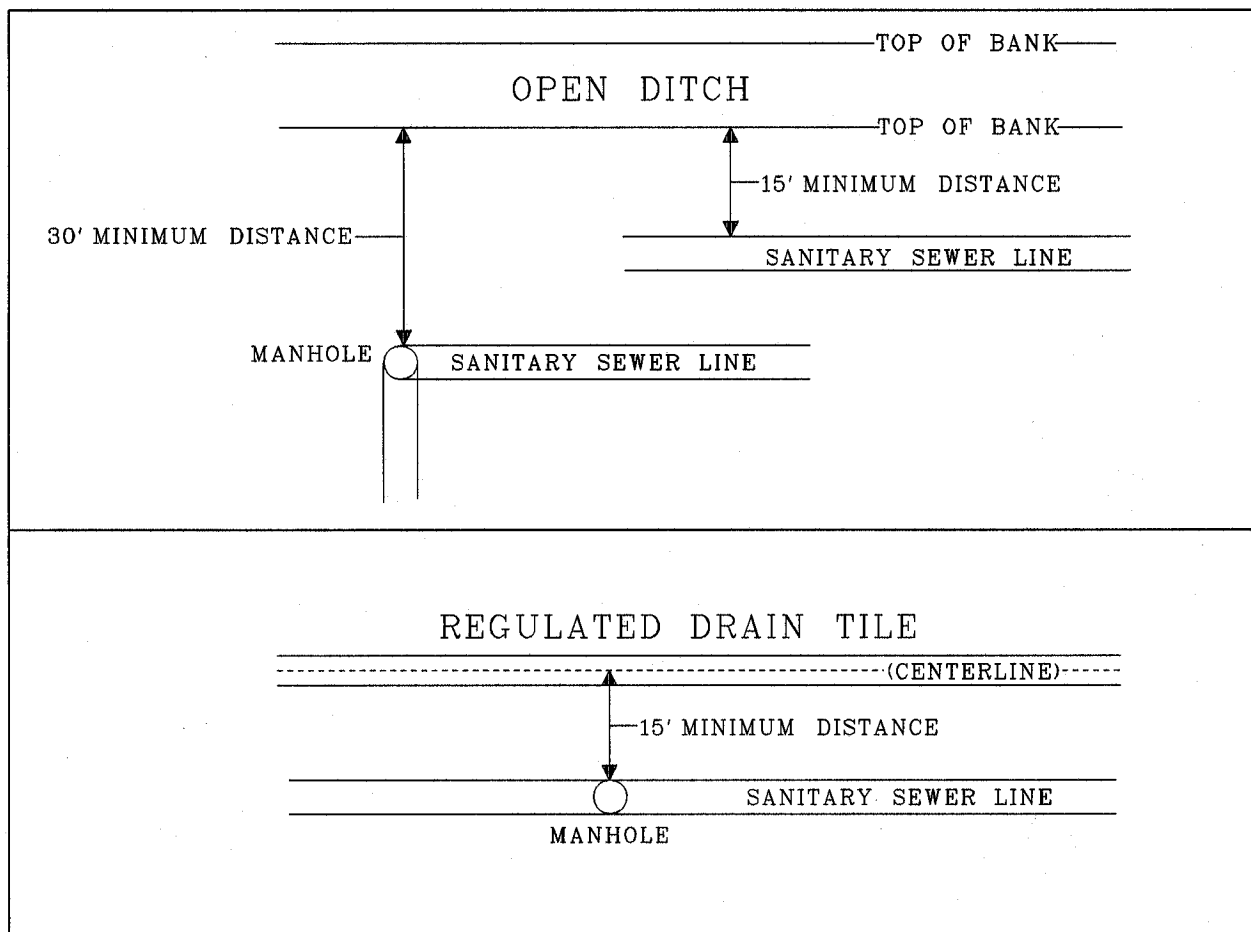
4 JAN 00
DATE

REVISED: 1 JAN 2000

STANDARD PLAN
M-4

OFFICE OF THE HAMILTON COUNTY SURVEYOR

STANDARD FOR SANITARY SEWERS BEING CONSTRUCTED WITHIN A REGULATED DRAINAGE EASEMENT



A SANITARY SEWER MANHOLE CANNOT BE LOCATED ANY CLOSER THAN 30 FEET FROM THE TOP OF BANK OF AN OPEN DITCH, OR 15 FEET FROM THE CENTERLINE OF A REGULATED DRAIN TILE.

THE ACTUAL SANITARY SEWER PIPE CANNOT BE LOCATED ANY CLOSER THAN 15 FEET FROM THE THE TOP OF BANK OF AN OPEN DITCH, OR FROM THE CENTERLINE OF A REGULATED DRAIN TILE.

DEEPER INSTALLATIONS OF SANITARY SEWERS MAY REQUIRE GREATER DISTANCE BETWEEN DRAIN AND SANITARY SEWER MANHOLE OR PIPE.

(DRAWING NOT TO SCALE)

HAMILTON COUNTY SURVEYOR'S OFFICE

REVISED: 1 JAN 2000

APPROVED: _____

KENTON C. WARD, HAMILTON COUNTY SURVEYOR

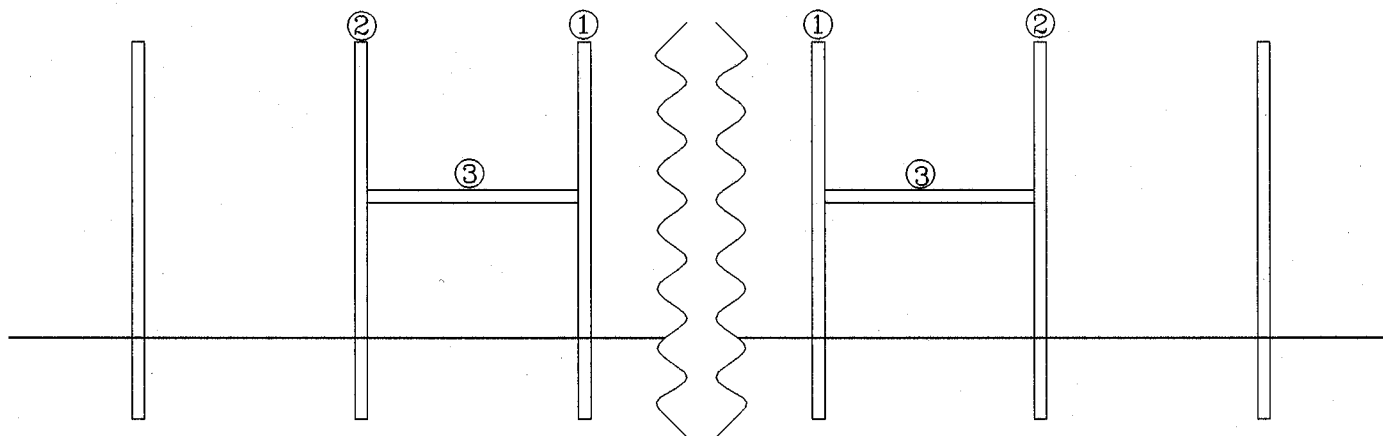
4 Jan 00
DATE

STANDARD PLAN
M-5

OFFICE OF THE HAMILTON COUNTY SURVEYOR

FENCING SPECIFICATIONS

Note: All fence cuts will be repaired, whether new or falling down in the following manner; unless specified in the plans or written consent not to repair the fence is given by the landowner.



1. Posts 1, 2 and 3 will be 4"x4"x7' of good wood.
2. Set posts 1 and 2 in the ground on either side of the working area.
3. Set the brace post 3.
4. Double staple the existing fence to posts 1 and 2.
5. Cut the existing fence and bend foot of fence around post 1 and wrap on itself.
6. After construction, a like fence will be reinstalled between number 1 posts using new materials. Use wood or steel posts and 5 barb or woven wire with one barb fence depending how the existing fence is made.
7. If the existing fence is made of wood posts, then post number 1 can be eliminated and the existing fence post can be used for post 1.
8. Brace wire shall be placed from top of post 1 to ground level of post 2 and tightened.

(DRAWING NOT TO SCALE)

HAMILTON COUNTY SURVEYOR'S OFFICE

APPROVED: _____

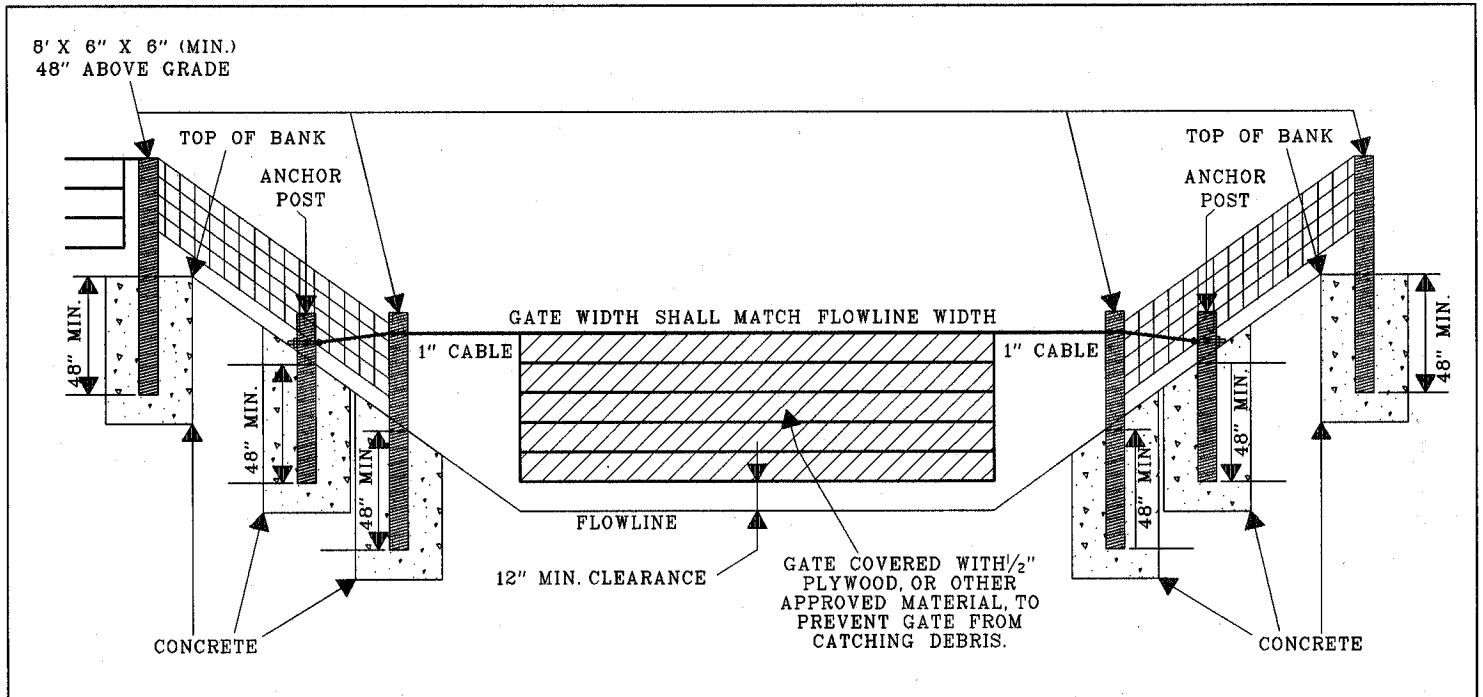
KENTON C. WARD, HAMILTON COUNTY SURVEYOR

4 JAN 2000
DATE

REVISED: 1 JAN 2000

STANDARD PLAN
M-6

FLOODGATE



(DRAWING NOT TO SCALE)

HAMILTON COUNTY SURVEYOR'S OFFICE

REVISED: 1 JAN 2000

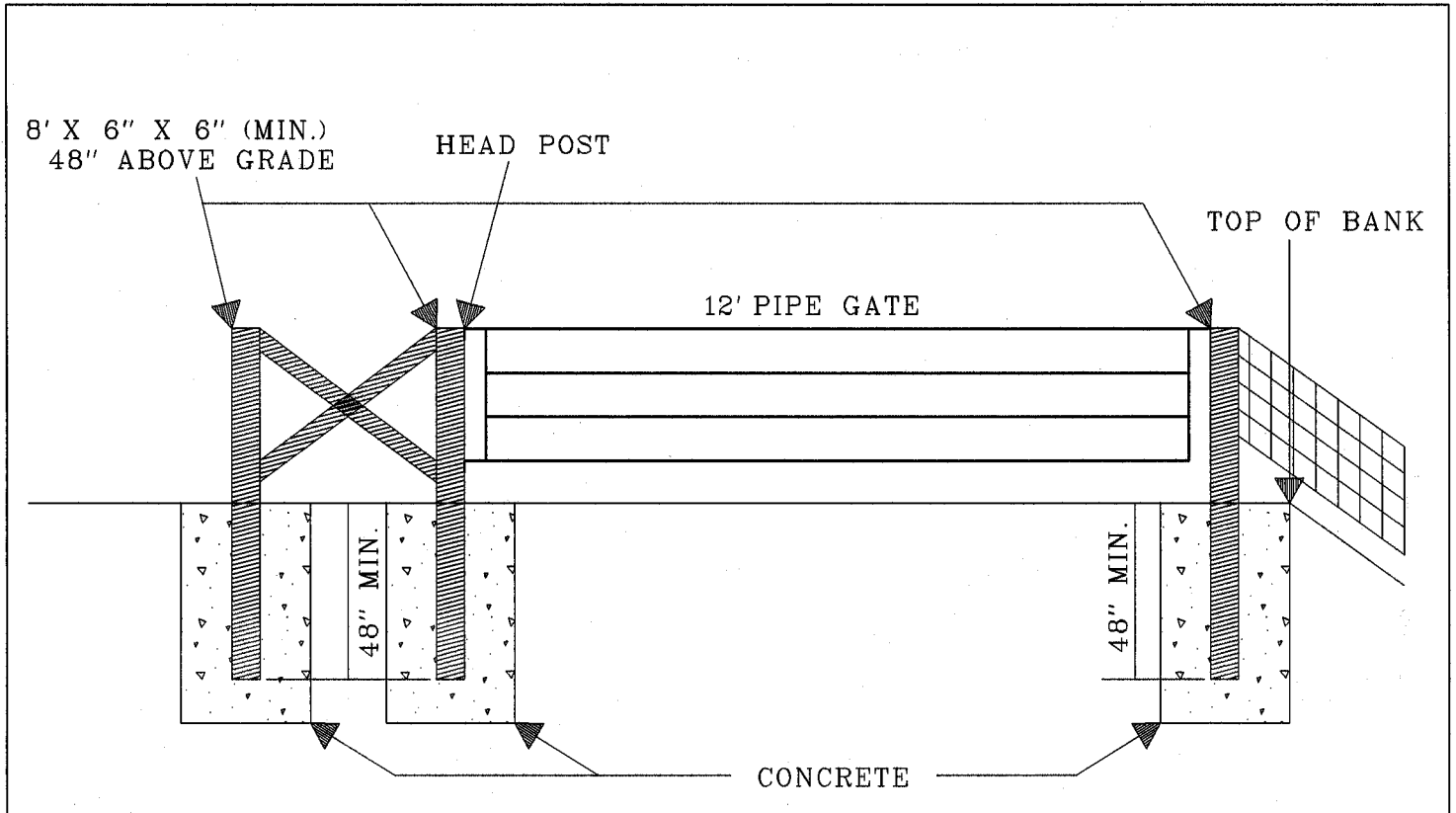
APPROVED:

KENTON C. WARD, HAMILTON COUNTY SURVEYOR

4 Jan 00
DATE

STANDARD PLAN
M-7

OFFICE OF THE HAMILTON COUNTY SURVEYOR



GATE

(DRAWING NOT TO SCALE)

HAMILTON COUNTY SURVEYOR'S OFFICE

APPROVED: _____

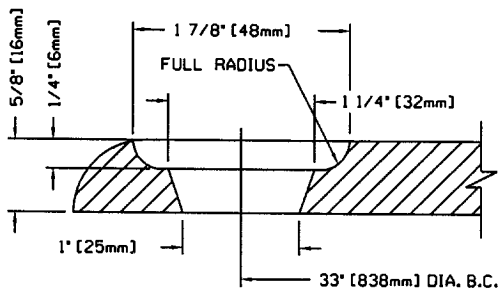
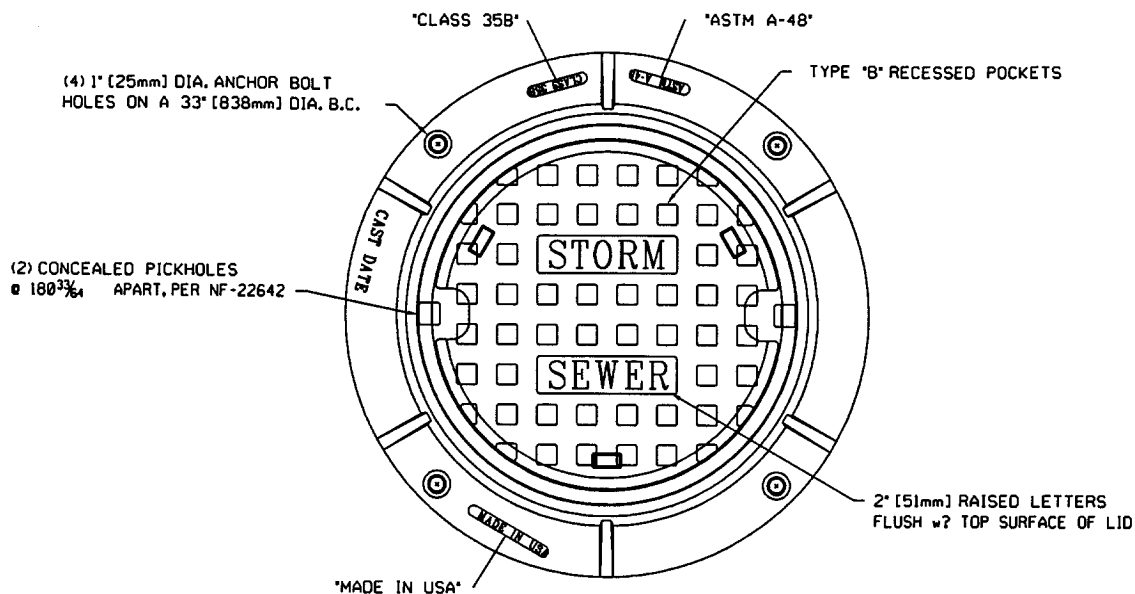
KENTON C. WARD, HAMILTON COUNTY SURVEYOR

4 JAN 00
DATE

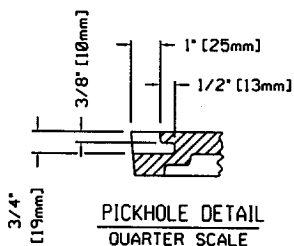
REVISED: 1 JAN 2000

STANDARD PLAN
M-8

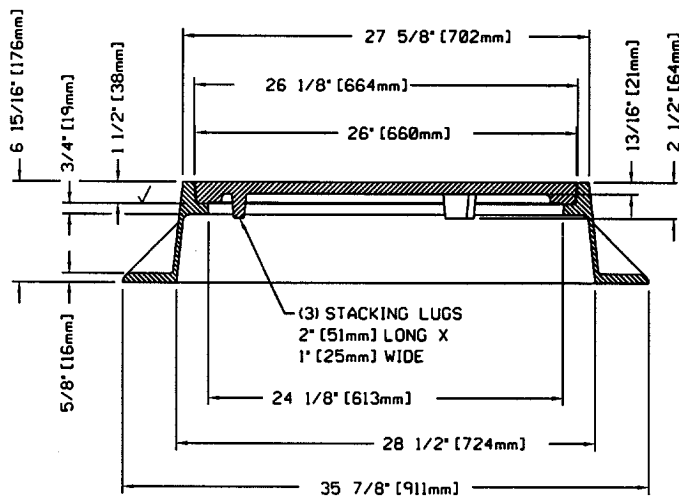
OFFICE OF THE HAMILTON COUNTY SURVEYOR



ANCHOR HOLE DETAIL
FULL SCALE



PICKHOLE DETAIL
QUARTER SCALE



NOTE: ALL DIMENSIONS ARE SHOWN IN ENGLISH AND (METRIC).
MATERIAL: CAST GRAY IRON ASTM A-48, CLASS 35B
FINISH: NOT PAINTED
WEIGHT: FRAME - 150#, LID - 124#

* Or approved by Hamilton County Surveyor's Office

(DRAWING NOT TO SCALE)

HAMILTON COUNTY SURVEYOR'S OFFICE

MANHOLE SOLID LID CASTING

REVISED: 9/25/2006

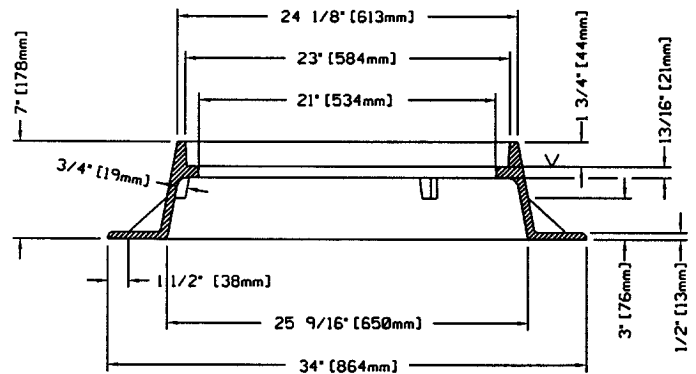
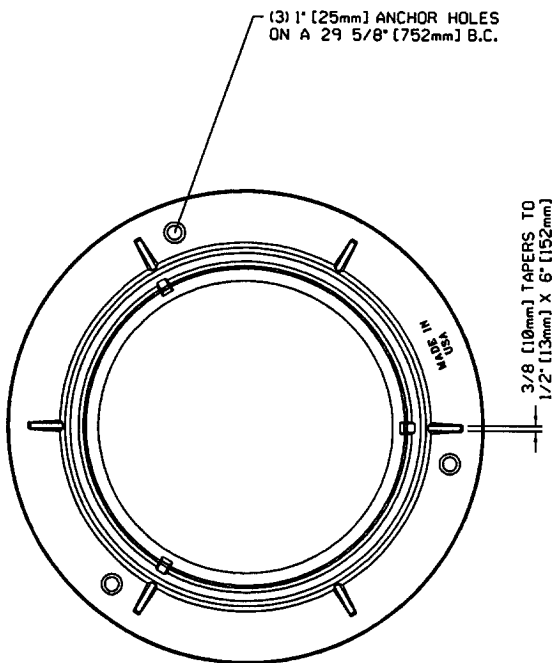
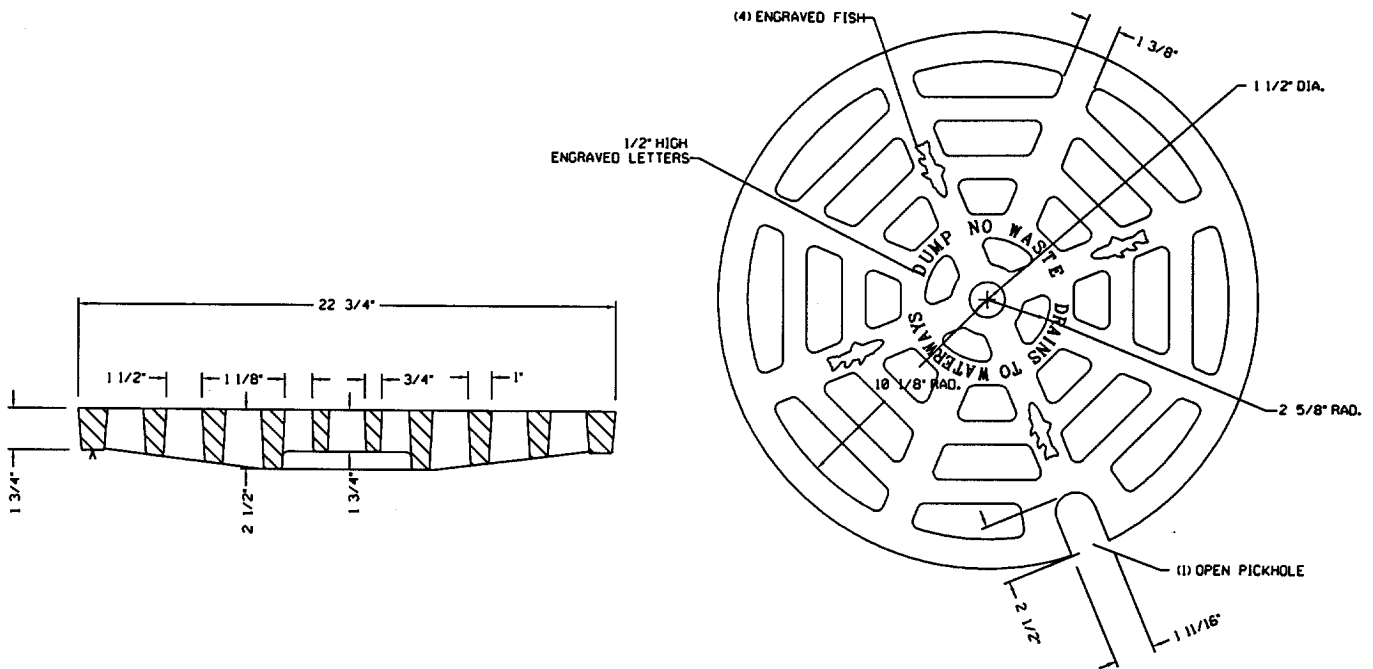
APPROVED: _____

KENTON C. WARD, HAMILTON COUNTY SURVEYOR

25 SEP 06
DATE

STANDARD PLAN
CT-1

OFFICE OF THE HAMILTON COUNTY SURVEYOR

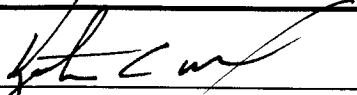


NEENAH	2015
EAST JORDAN	1050 M1

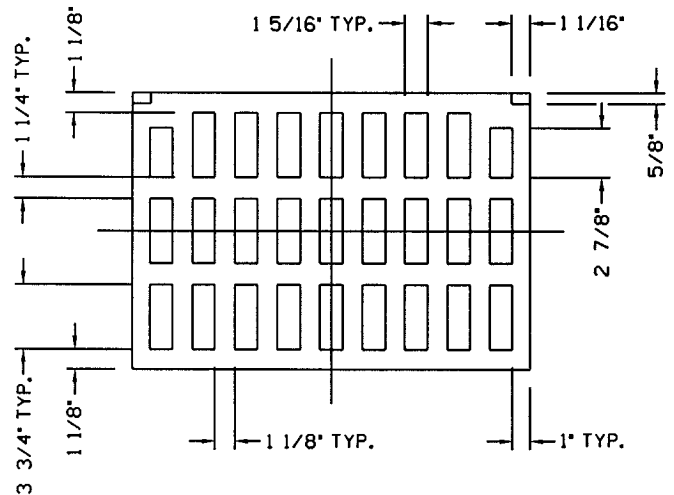
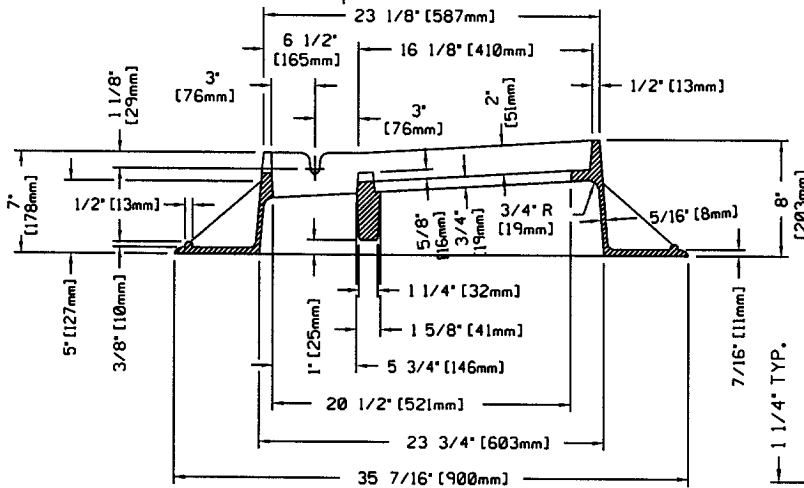
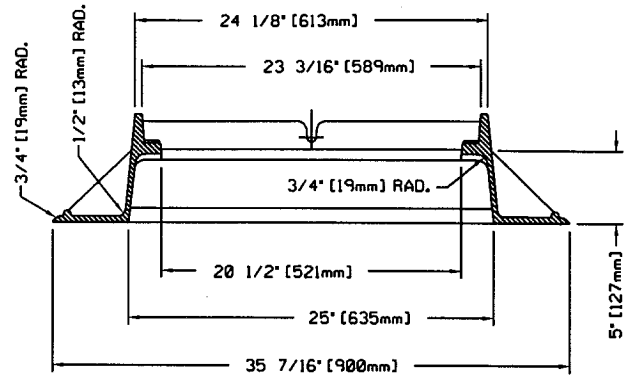
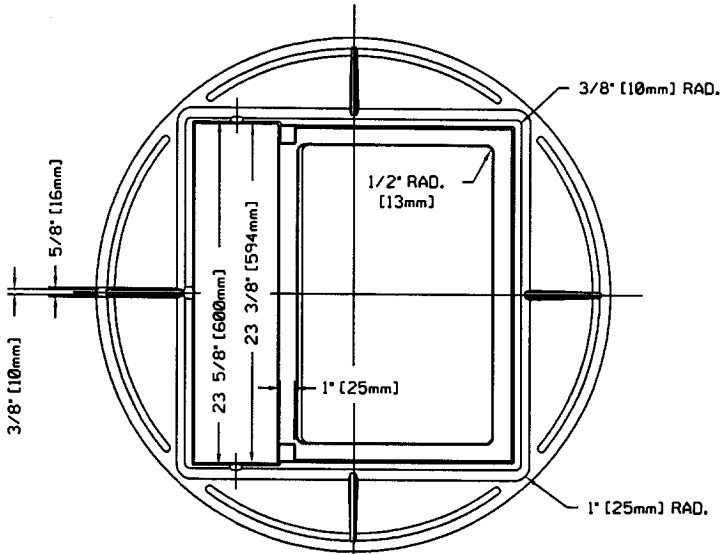
NOTE: ALL DIMENSIONS SHOWN ARE IN ENGLISH
 MATERIAL: CAST GRAY IRON ASTM A-48, CLASS 35B
 FINISH: NO PAINT
 WEIGHT: 118"
 WAS 2015 117

* Or approved by Hamilton County Surveyor's Office

(DRAWING NOT TO SCALE)

HAMILTON COUNTY SURVEYOR'S OFFICE		
MANHOLE SLOTTED GRATE AND FRAME CASTING		REVISED: 9/25/2006
APPROVED: 	25 SEP 06 DATE	STANDARD PLAN CT-2
KENTON C. WARD, HAMILTON COUNTY SURVEYOR		

OFFICE OF THE HAMILTON COUNTY SURVEYOR



REFER TO SHEET CT-5

NEENAH	3010
EAST JORDAN	7010M1

NOTE: ALL DIMENSIONS SHOWN ARE IN ENGLISH AND [METRIC].
MATERIAL: CAST GRAY IRON ASTM A-48, CLASS 35B
FINISH: NO PAINT
WEIGHT: APPROX. 167*

* Or approved by Hamilton County Surveyor's Office

(DRAWING NOT TO SCALE)

HAMILTON COUNTY SURVEYOR'S OFFICE

FRAME, W/ 4 SIDED SEAT

REVISED: 9/25/2006

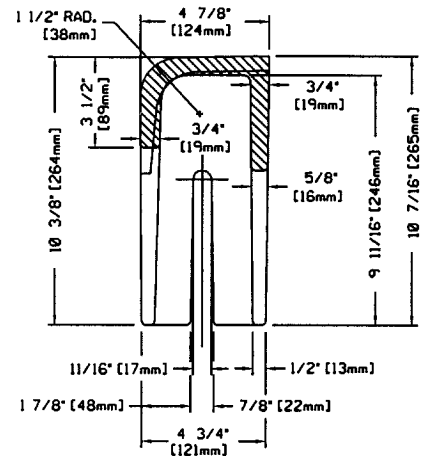
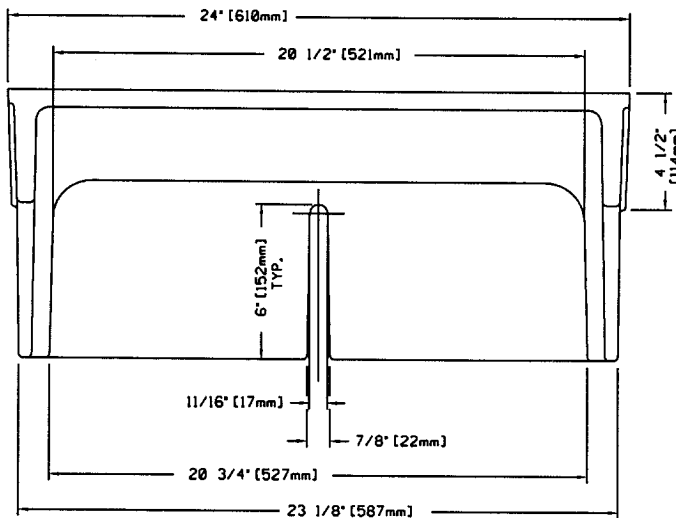
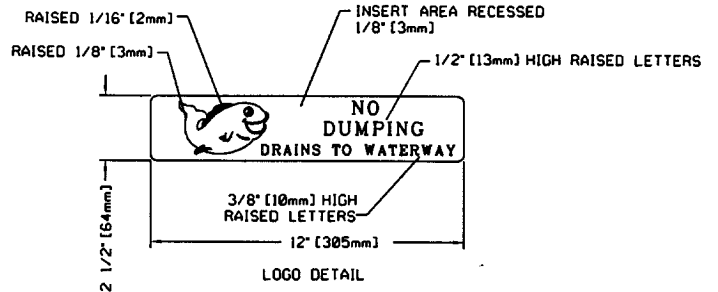
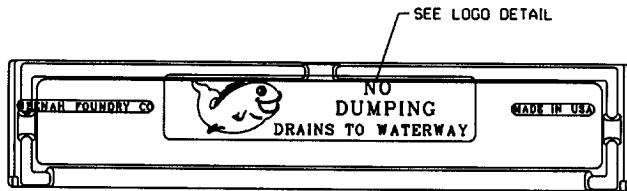
APPROVED: _____

KENTON C. WARD, HAMILTON COUNTY SURVEYOR

25 SEP 06
DATE

STANDARD PLAN
CT-4

OFFICE OF THE HAMILTON COUNTY SURVEYOR



REFER TO SHEET CT-4

NEENAH	3010
EAST JORDAN	7010T1

NOTE: ALL DIMENSIONS SHOWN ARE IN ENGLISH AND [METRIC]
MATERIAL: CAST GRAY IRON ASTM A-48, CLASS 35B
FINISH: NO PAINT
WEIGHT: 82*

* Or approved by Hamilton County Surveyor's Office

(DRAWING NOT TO SCALE)

HAMILTON COUNTY SURVEYOR'S OFFICE

1 1/2" RADIUS OPEN CURB BOX

REVISED: 9/25/2006

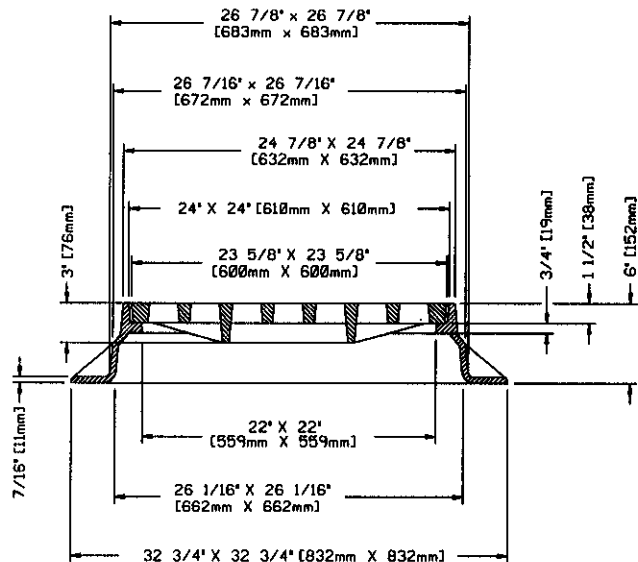
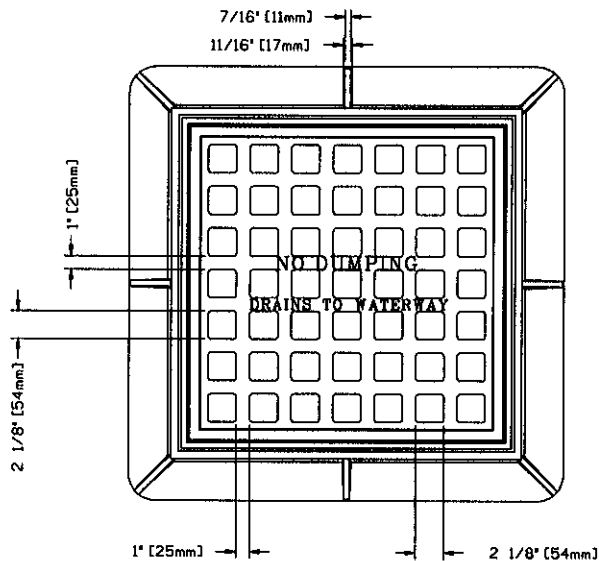
APPROVED:

KENTON C. WARD, HAMILTON COUNTY SURVEYOR

25 SEP 06
DATE

STANDARD PLAN
CT-5

OFFICE OF THE HAMILTON COUNTY SURVEYOR



NEENAH	3405
EAST JORDAN	5250

NOTE: ALL DIMENSIONS SHOWN ARE IN ENGLISH AND (METRIC)
 MATERIAL: CAST GRAY IRON ASTM A-48, CLASS 35B
 FINISH: NO PAINT
 WEIGHT: FRAME 138*; GRATE 138*

* Or approved by Hamilton County Surveyor's Office

(DRAWING NOT TO SCALE)

HAMILTON COUNTY SURVEYOR'S OFFICE

PARKING LOT INLET CASTING

REVISED: 11/16/2004

APPROVED: _____

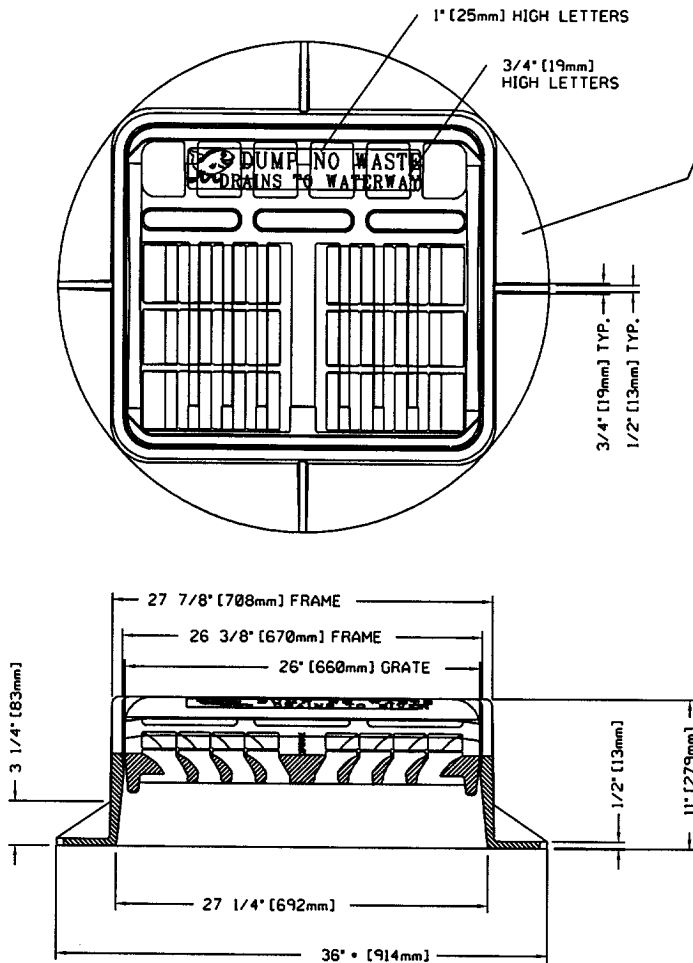
KENTON C. WARD, HAMILTON COUNTY SURVEYOR

KFEROS

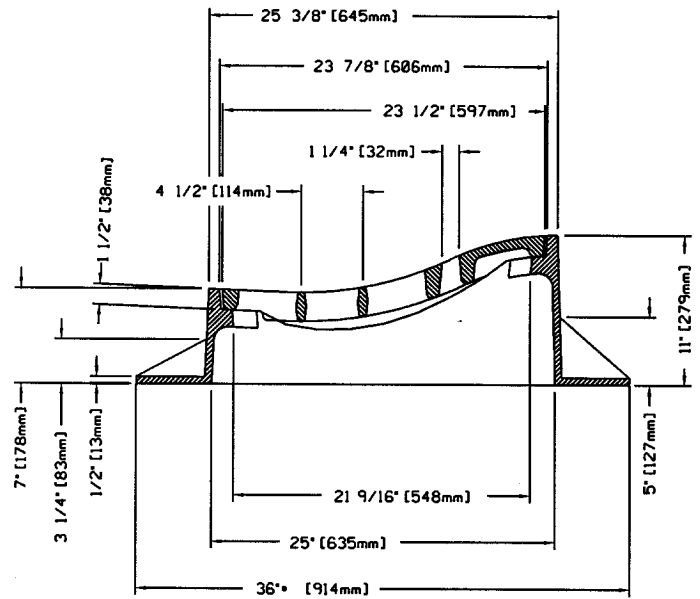
DATE

STANDARD PLAN
 CT-6

OFFICE OF THE HAMILTON COUNTY SURVEYOR



Base may be round or rectangular.



* This casting to be used when curb flow comes from both directions

NEENAH	3501-L2
EAST JORDAN	7495-M4

NOTE: ALL DIMENSIONS SHOWN ARE IN ENGLISH AND [METRIC]
MATERIAL: CAST GRAY IRON ASTM A-48, CLASS 35B
FINISH: NO PAINT
WEIGHT: FRAME 214*, GRATE 177*

* Or approved by Hamilton County Surveyor's Office

(DRAWING NOT TO SCALE)

HAMILTON COUNTY SURVEYOR'S OFFICE

CURB BI-DIRECTIONAL CASTING

REVISED: 10/4/2006

APPROVED: _____

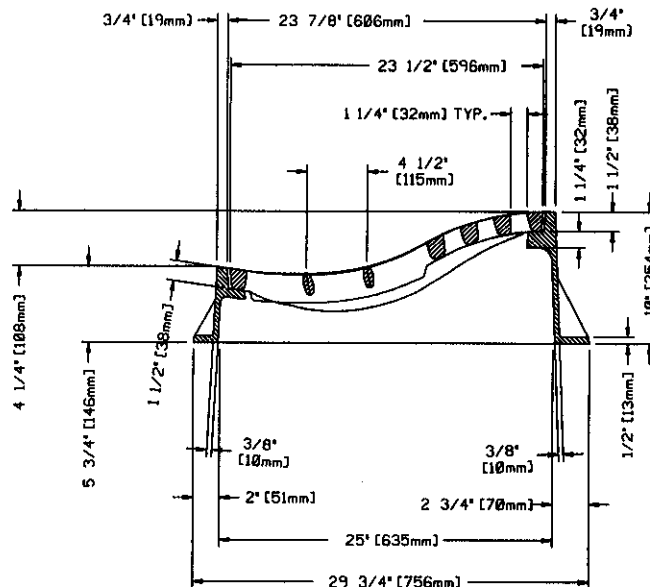
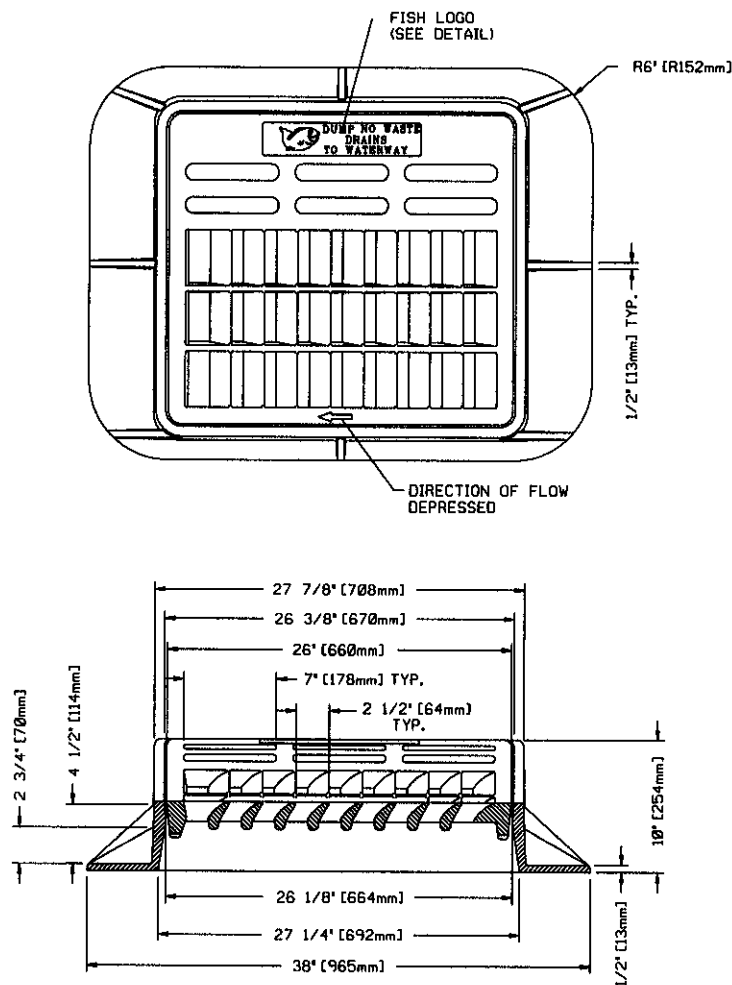
KENTON C. WARD, HAMILTON COUNTY SURVEYOR

10/4/06
DATE

STANDARD PLAN

CT-7

OFFICE OF THE HAMILTON COUNTY SURVEYOR



NOTE: ALL DIMENSIONS SHOWN ARE IN ENGLISH AND [METRIC]
 MEETS AASHTO M-306 PROOF LOAD REQUIREMENTS.
 MATERIAL: CAST GRAY IRON ASTM A-48, CLASS 35B
 FINISH: NO PAINT
 WEIGHT: FRAME 211*; GRATE 156*

NEENAH	3501-TL or TR
EAST JORDAN	7495-M2 or M1

* Or approved by Hamilton County Surveyor's Office

(DRAWING NOT TO SCALE)

HAMILTON COUNTY SURVEYOR'S OFFICE

CURB INLET CASTING

REVISED: 11/16/2004

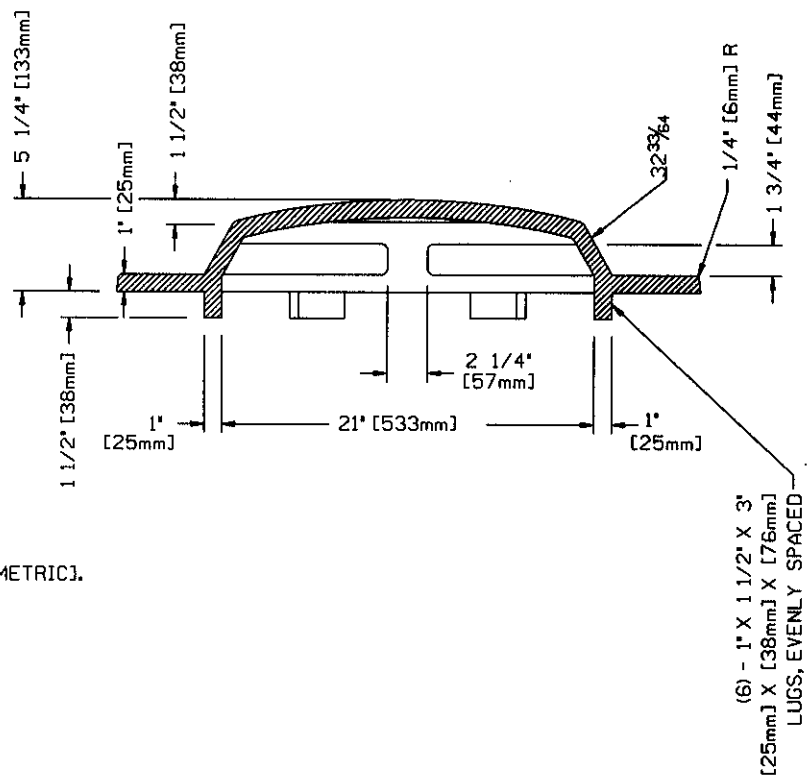
APPROVED: _____

KENTON C. WARD, HAMILTON COUNTY SURVEYOR

14 FEB 05
DATE

STANDARD PLAN
CT-8

Technical drawing of a circular storm drain cover. The cover features a central rectangular area with three horizontal slots. The text "NO DUMPING" is centered above the middle slot, and "DRAINS TO WATERWAY" is centered below it. The outer ring of the cover contains the text "DATE XXX-X" at the top, "MADE IN USA" at the bottom, and "1 1/4\" R [32mm]" on the left side. Dimensions are indicated by arrows: a total diameter of 21 5/8\" [549mm] is shown on the left; a width of 2\" [51mm] TYP. is shown at the bottom left; a width of 1 1/4\" TYP. [32mm] is shown on the right; a width of 2 1/2\" TYP. [64mm] is shown at the bottom right; and a total diameter of 33\" [838mm] is shown on the far right.



WEIGHT: 200#

NEENAH	4342
EAST JORDAN	6489N

(DRAWING NOT TO SCALE)

BEEHIVE INLET CASTING

REVISÉ: 11/16/2004

APPROVED:

KENTON C. WARD, HAMILTON COUNTY SURVEYOR

AFTEROS
DATE

STANDARD PLAN CT-10